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AUTOMOTIVE INDUSTRIES

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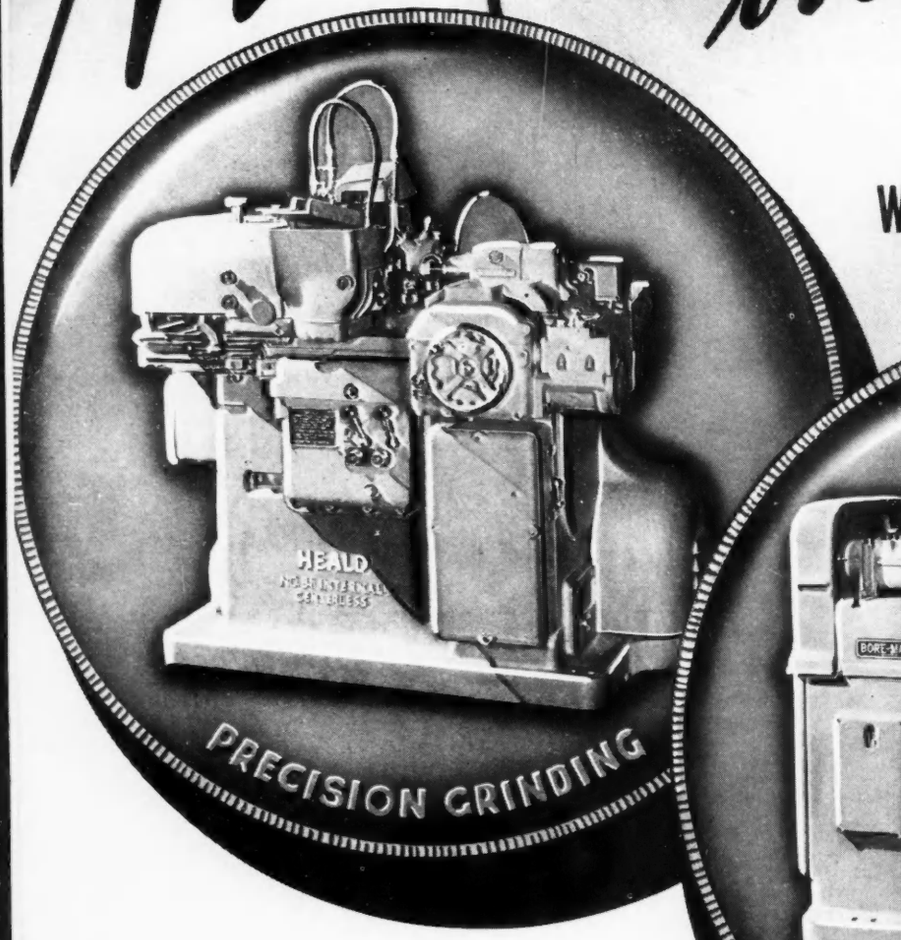

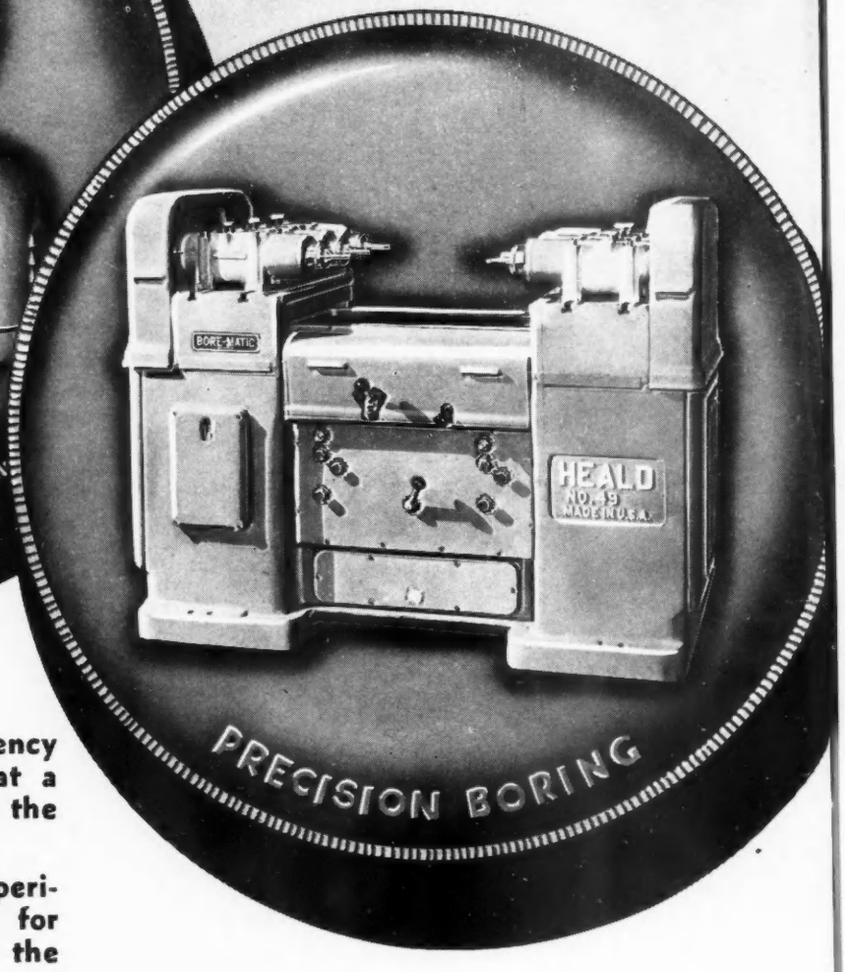

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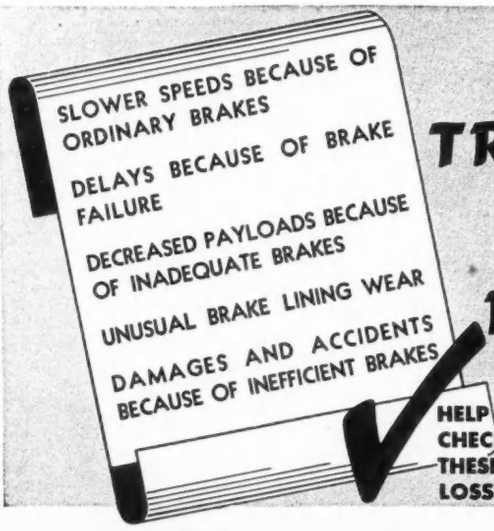
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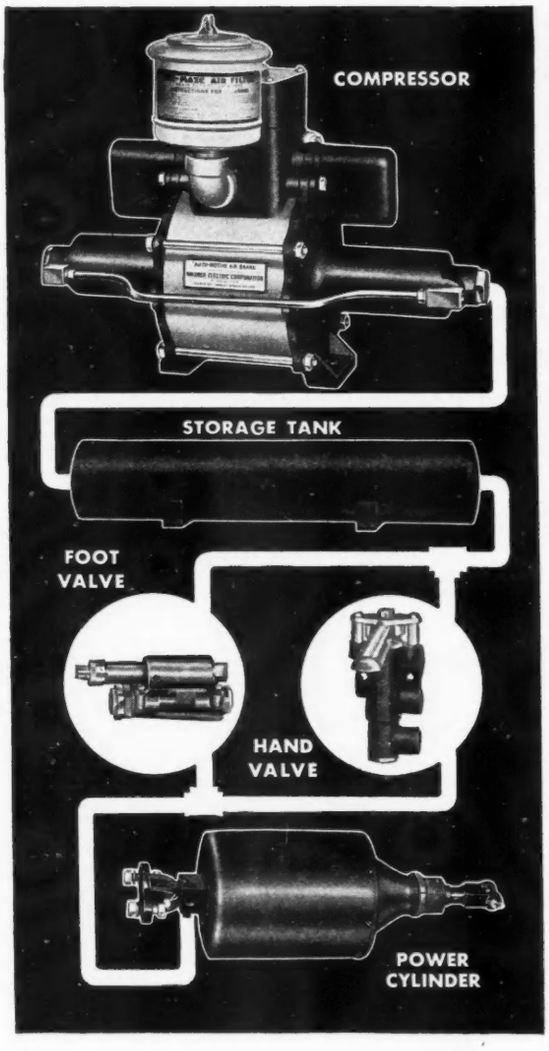

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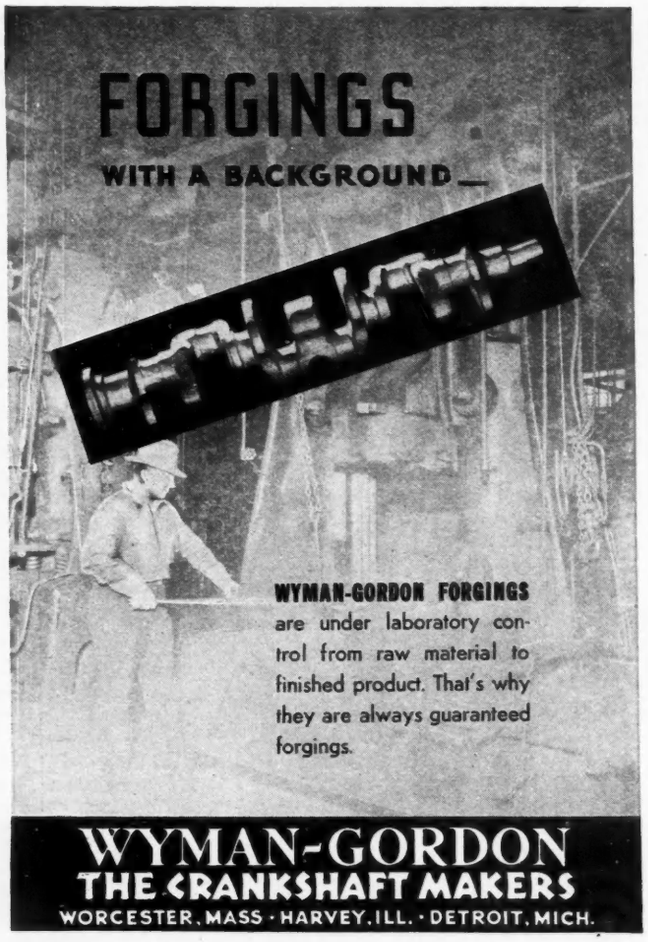
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The Automobile

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AUTOMOTIVE INDUSTRIES

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January 7, 1939

News of the Industry

PATENT INVESTIGATION

• A comprehensive investigation of the whole patent problem has been started by the National Industrial Conference Board, independent fact-finding organization of management and labor. Technical phases of the investigation will be supervised by the Committee on Patents of the American Engineering Council, while the economic aspects will be analyzed by the Conference Board's economists under supervision of Dr. Robert F. Martin, Director of the Economic Research Division of the Board.

SALES INDEX

• The preliminary adjusted index of the value of retail sales of new passenger automobiles showed a large increase from October to November, according to the Bureau of Foreign and Domestic Commerce, Department of Commerce.

This index, which makes allowance for the number of days as well as for seasonal movements rose to 104.0 in November, on the basis of the 1929-1931 average as 100, compared with 84.5 in October and 60.0 in September, 1938.

Sales in November, according to the unadjusted preliminary figures, were 10 per cent higher than in November 1937, and 12 per cent lower than in November 1936. Daily average sales without seasonal adjustment, showed an increase of 82 per cent from October to November.

The aggregate value for the first eleven months of this year was about 43 per cent lower than that for the corresponding period of last year, and about 38 per cent less than the first eleven months of 1936.

CUBAN MARKET DECLINE

• A further decline in Cuba's motor vehicle market, with sales for the third quarter falling below the June quarter and substantially lower than in the third quarter of 1937 is reported by the Commerce Department.

The unfavorable showing was attributed to a general decrease in business activity, an unsatisfactory price for Cuban sugar, and possible budget readjustments in the offing which would mean loss of jobs to many government employees.

Total imports of passenger cars during the first nine months of 1938 numbered 1857, as compared with 3080 during the corresponding period in 1937. Imports of trucks amounted to 1350 during the first nine months, as compared with 2446 in 1937. Sales of replacement parts showed a much smaller decline, the report said.

AUTOMOTIVE INDUSTRIES

Summary of Automotive Production Activity
(Week Ending Jan. 7)

BUSES Although present operations continue about 50 per cent or less there is general feeling of optimism for the new year. The transient index for the country reported as two to five per cent over last year is taken by producers to indicate the probability of future demand for additional equipment.

TRUCKS One producer announces personnel expansion to prepare for what it believes will be its biggest year. Another producer states that, although output at present is at 50 per cent, various departments are working at full time in anticipation of spring business. Another large manufacturer is maintaining recently stepped-up production schedule. Large fleet operators reported as best buyers at present.

TRACTORS Producers currently believe 1939 will exceed 1938. Increased output expected shortly in several plants, but general pick-up in sales not expected before readjustment of farm commodity prices.

AUTOMOBILES AUTOMOTIVE INDUSTRIES' estimate for car and truck production for the present week set at slightly in excess of 75,000 units. Slight curtailment for the remaining weeks in January is predicted. Preliminary estimates for January place the output at 325,000 units.

MARINE ENGINES Exhibitors at current National Motor Boat Show express optimism for 1939, forecasting an increase in popularity of pleasure craft during the year. Diesel and gasoline engine sales reported running about equal.

AIRCRAFT ENGINES High production rate continues with proposed rearmament program and civilian flight training program giving promise of continued high output during 1939.

This summary is based on confidential information of current actual production rates from leading producers in each field covered. Staff members in Detroit, Chicago, New York and Philadelphia collect the basic information, in all cases from official factory sources.

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Production

Output Contraction from December Expected to Be Less Than Usual

Holiday layoffs rather than seasonal influences appeared to be the principal contributors to modified passenger car and truck production schedules for the first week of the new year. Production workers returned realistically to their jobs on Jan. 2 in marked contrast with 1938.

As a matter of fact, a midweek check of production schedules for the week ending Jan. 7 indicated that the industry would turn out approximately the same number of cars and trucks as during the last week in 1938, which also was shortened by holiday observance.

A few producers were not in operation this week because of the usual year-end inventory and schedule readjustment periods, but a considerable number of plants were expecting to work the full four days in the week. It is estimated that car and truck production for the week will be slightly in excess of 75,000 units.

Some curtailment of total production is anticipated for the remaining weeks in January because of seasonal influences, but the contraction from December highs does not appear to be as great as usual. January production of Ford, Mercury and Lincoln-Zephyr cars is expected to exceed 94,000 units, which is an increase over December and also over January, 1938.

Another example of the improved situation in automobile production is the announcement by Hudson Motor Car Co. that its shipments to its domestic distributing organization since announcement of 1939 models is already half of its total shipments during the entire 1938 model season.

Production during the current week will be approximately 30,000 units ahead of the same week a year ago, and preliminary estimates of a total January output of 325,000 cars and trucks will put the month

(Turn to page 12, please)

News of the Industry

FINANCING

● The dollar volume of retail automobile financing for October, 1938, as reported by the Department of Commerce, Bureau of the Census, amounted to $67,252,459, an increase of less than one-tenth of 1 per cent when compared with September, 1938; a decrease of 38.4 per cent when compared to October, 1937, and a decrease of 36.9 per cent as compared with October, 1936. The volume of wholesale financing for October, 1938, amounted to $63,869,584, an increase of 124.1 per cent when compared with September, 1938; a decrease of 52.3 per cent compared with October, 1937, and a decrease of 15.1 per cent as compared with October, 1936.

● Proposal to consolidate General Motors Management Corp. and General Motors Securities Co. was approved by stockholders at a special meeting in Wilmington, Del., last week. Among other things, the plan provides for E. I. du Pont de Nemours & Co. to take direct ownership of 9,843,750 shares of General Motors Corp. stock which it has held heretofore through the General Motors Securities Co. which will now be liquidated, it was reported.

Both the General Motors companies will be merged into a new company to be known as G. M. Shares, Inc., to be owned entirely by former stockholders of the Managers Securities Co. and present stockholders of General Motors Management, it was said.

One of the chief reasons for the consolidation was said to be the burden of intercorporate dividends tax, which amounts to 2½ per cent on dividends received by the Securities Co. from General Motors and again on dividends received by the du Pont Co. from the Securities Co. The du Pont Co. also wishes to divest itself, it was reported, of voting control over shares in which it has no beneficial interest and is anxious to simplify the corporate structures involved. Another feature of the plan is said to be that it enables those who want to convert their Management Co. stock into General Motors stock to do so up to practically the full extent of their investment.

● Willys-Overland Motors, Inc., maintained a sound cash position during a difficult automobile year, and operated without borrowing, according to a report by D. R. Wilson, president. Cash and receivables as of September 30, 1938, were $1,506,357.02 and inventories amounted to $1,516,825.84, with total current assets of $3,023,182.86. Current liabilities were $527,651.51, with a net working capital of $2,495,531.35, a working capital ratio of 5.7 to 1. Operations of the company showed a net consolidated loss of $1,276,989.77.

● After breaking above the 1937 level in October for the second time this year, financing of motor vehicle sales in Canada reacted in November. The number financed in the latest month was 9,674 to the extent of $4,065,233, compared with 11,192 for $4,525,173 in October and 10,106 for $4,446,651 in November, 1937. The number of new vehicles financed in latest month was 2,645 and used vehicles 7,029. Totals for the 11 months ended November show 151,881 vehicles financed for $65,034,461, against 168,854 for $71,459,789 in the same period of 1937, indicating decreases of 10 per cent in number and 9 per cent in dollar value. Totals by months for 1938 to date, and comparisons with 1937, follow:

	1938	1937
January	$3,148,390	$3,297,996
February	3,504,257	3,598,647
March	5,201,660	5,956,017
April	9,405,865	9,088,948
May	10,089,544	10,565,573
June	8,147,039	10,437,641
July	6,377,109	8,295,518
August	5,673,207	6,366,700
September	4,876,984	5,082,805
October	4,525,173	4,323,293
November	4,065,233	4,446,651
Totals	$65,034,461	$71,459,789

● Sales of the Firestone Tire & Rubber Co. for the fiscal year which ended October 31, were $141,882,681 and net profits for the year after all charges were $5,528,041, or $1.27 per share on common stock, it was reported to stockholders December 21. Sales in 1937 were $156,823,095. Current assets October 31 were $84,750,403 and current liabilities were $9,429,496. Earned surplus on that date was $39,052,754. Dividends paid during the year were $5,188,756.

● The entire outstanding funded debt of the Seiberling Rubber Co., Akron, was retired Dec. 29 through the purchase at public sale in New York City of $2,350,000 of 6 per cent Class A debenture notes for $752,000. Announcement of the transaction was made by J. P. Seiberling, president of the company. The debenture notes, originally amounting to $3,100,000, and due November 15, 1939, were issued on May 15, 1930, for the purpose of consolidating and funding the company's bank indebtedness. In 1931, $750,000 of the notes were retired at face value, but until now no further retirements were made. Interest on the notes amounted to $141,000 per year.

Contracts Awarded

War Department Places Orders Totaling $376,397

The War Department has announced awards totaling $376,397 for motor vehicles, wheel and brake assemblies for the Air Corps and a miscellaneous selection of special machinery under the Ordnance Procurement Program.

Under motor vehicle purchases, the Department awarded a $14,178.63 contract to the General Motors Corp., Chevrolet Division, Detroit, for 24 five-passenger sedans, and a $2,250.25 contract to the Leonhardt Wagon Mfg. Co., Baltimore, for a two-wheel semi-trailer. Contracts awarded by the Air Corps, including wheel and brake assemblies, blade and hub assemblies, propeller blades and steel tubing, follow:

Hayes Industries, Inc., Jackson, Mich., $17,123; the Goodyear Tire & Rubber Co., Inc., Akron, Ohio, $326.30; The B. F. Goodrich Co, Akron, Ohio, $336; Bendix Products Division, Bendix Aviation Corp., South Bend, Ind., $49,152; Hartzell Propeller Co., Piqua, Ohio, $15,900; Pittsburgh Screw & Bolt Corp., Pittsburgh, Pa., $57,000; United Aircraft Corp., Hamilton Standard Propellers Division, East Hartford, Conn., $2,050; Steel Products Engineering Co., Springfield, Ohio, $13,315; Curtiss-Wright Corp., Curtiss

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New Truck Registrations

New truck registrations for the month of November, 1938, numbered 23,943—an increase of approximately 22 per cent over the previous month and about 13 per cent below the registrations reported for November, 1937. The showing for 11 months of 1938 as compared with 11 months of 1937 is indicated by a minus 43.1 per cent.

	November 1938	October 1938	November 1937	ELEVEN MONTHS 1938	ELEVEN MONTHS 1937	Per Cent Change, 11 Mths. 1938 over 1937	Per Cent of Total Eleven Months 1938	Per Cent of Total Eleven Months 1937
Chevrolet	9,333	3,828	8,317	107,354	173,169	— 37.9	32.15	29.51
Ford	5,725	4,966	4,567	92,450	181,548	— 49.1	27.69	30.94
International	4,088	5,104	5,000	51,904	71,818	— 27.6	15.55	12.24
Dodge	1,088	1,564	3,851	31,058	60,559	— 48.8	9.30	10.32
G. M. C.	1,211	1,306	2,297	18,383	41,472	— 55.6	5.51	7.07
Plymouth	176	306	721	6,346	12,999	— 51.2	1.90	2.20
Diamond T	349	419	389	4,106	7,735	— 47.0	1.23	1.32
Mack	490	512	343	3,983	5,199	— 23.3	1.19	.89
White	302	291	407	3,226	5,612	— 42.5	.97	.96
Reo	229	285	194	2,732	4,000	— 31.7	.82	.68
Studebaker	141	162	180	1,836	4,943	— 62.8	.55	.84
Willys-Overland	103	140	80	1,771	938	+ 89.0	.53	.16
Autocar	147	135	151	1,511	2,031	— 25.6	.45	.35
Federal	101	100	122	1,272	2,244	— 43.3	.38	.38
Brockway	124	135	119	1,201	1,491	— 19.5	.36	.25
Divco	106	76	44	1,151	1,098	+ 5.0	.34	.19
Hudson	31	26	152	691	4,732	— 85.3	.21	.81
Indiana	34	26	74	414	1,313	— 68.5	.12	.22
Stewart	14	45	66	358	1,098	— 67.3	.11	.19
F. W. D.	9	13	29	257	412	— 37.6	.08	.07
Sterling	26	19	14	235	301	— 22.0	.07	.05
Pontiac	8	2		217			.06	
Stutz Pak-Age Car	4	1	15	97	582	— 83.4	.03	.10
Miscellaneous	104	128	116	1,322	1,546	— 14.3	.40	.26
Total	23,943	19,589	27,248	333,875	586,840	— 43.1	100.00	100.00

Propeller Division, Clifton, N. J., $28,425; and the Ohio Seamless Tube Co., Shelby, Ohio.

Under the 3-in. anti-aircraft program, Joseph T. Ryerson & Sons, Inc., of Chicago, was awarded a $27,300 contract for steel bar stock. Other contracts awarded under the Ordnance Procurement Program for special machinery went to the following:

Pratt & Whitney Division, Niles-Bement-Pond Co., Hartford, Conn., profiling machines and a bench lathe, $50,870 and $1,081 respectively; Jones & Lamson Machine Co., Springfield, Vt., automatic lathes, $25,825.50; Hendey Machine Co., Torrington, Conn., lathes, $7,002; The La Pointe Machine Tool Co., Hudson, Mass., horizontal hydraulic broaching machine, $5,627; and the Union Twist Drill Co., Athol, Mass., circular cutter grinders, $5,550.

Rubber Industry Outlook Bright

"For the coming year, the outlook for the rubber manufacturing industry is encouraging, if the current forecasts of improvement in general business conditions prove to be justified," said A. L. Viles, president of the Rubber Manufacturers Association, Inc., in a recent statement. "The present prospects for the automobile industry," he said, "indicate that tire sales for original equipment will be considerably higher than during the past year."

In commenting on the activity of the industry during the past year, Mr. Viles said: "A recent study of the experiences of a large number of tire users who ran an aggregate of about five billion tire miles last year, showed that in the year the average tire mileage increased about 6½ per cent. During the last ten years, the average increase for this same representative group has been 76 per cent. Incidentally, this constant increase in mileage has been accompanied by a decline in prices that has enabled the average American car owner to reduce his annual tire cost in the past twelve years by some $34, from about $60 to $26.

"The past year has also seen a marked expansion in the use of rubber tires on tractors and other farm implements. About three-quarters of all the tractors now produced are equipped with rubber tires. Furthermore, the number of rubber parts in all types of automobiles is constantly growing. These rubber parts already number about 200, and weigh about 50 pounds per car on the average, exclusive of tires and tubes."

Acme photo

DEBUT First passenger plane designed for "stratosphere" flying was shown at Seattle, Dec. 27, by the Boeing Aircraft Co. Engine tests awaited the 35-passenger ship, which follows the design of the Army's four-engined Boeing bombers but with a larger fuselage. The ship is designed to cruise at higher than 20,000 ft. at 300 m.p.h. The plane is 74 ft. long with a 107 ft. wingspread. It was built for Pan-American Airways.

Industry Looks for Better Year

Unexpectedly Strong Final Quarter and December Sales. Form Basis for Optimistic Plans for 1939

Despite the fact that production for the calendar year 1938 is estimated by the Automobile Manufacturers Association at approximately 2,635,000 passenger cars and trucks in the United States and Canada—a full 47 per cent below the previous year—year-end statements by automobile manufacturers reflect gratification for strong final-quarter sales and an optimistic outlook, albeit tempered with caution, for 1939.

The cheering outlook of producers for 1939 is based in great part upon the unexpectedly large final-quarter sales volume and particularly the strong December sales figures. The Buick division of General Motors achieved an all-time sales record in the fourth quarter of 1938 and likewise produced more cars than in any corresponding period in the history of the company.

Figures released by Harlow H. Curtice, president and general manager, showed that, with December retail deliveries in the domestic market estimated at 19,000 units, Buick dealers sold 58,720 cars in October, November and December, compared with 52,274 in the same period last year, and with 53,091 in 1936, the previous all-time high.

The December estimate of 19,000 units, based on reported sales of more than 12,000 through the first 20 days of the month, represents a gain of 27 per cent over last year, when December sales totaled 14,970. It brings total domestic deliveries of Buick cars during 1938 to 169,718, an increase of 3 per cent over 1936 and a decline of only 17 per cent under last year's retail volume.

Sales of Ford and Mercury cars and Ford trucks in the United States during the first twenty days of December reached a total of 37,161 units, according to a recent announcement by the Ford Motor Company.

Exclusive of the Mercury sales, it was the biggest first twenty-day sale of any month in 1938, and exceeds Ford sales in December, 1937, by more than 5500. Sales of Ford and Mercury cars continue to exceed production, it is reported.

Sales of Pontiac cars during the last half of November exceeded the first half of the month, which was contrary to 1937 and exceeded those of November, 1937, as well, according to C. P. Simpson, general sales manager. "The opening twenty days of December," he said, "were ahead of the first twenty days of November, which is contrary to custom. Also, they were materially greater than the corresponding first twenty days of December, 1937.

"Deliveries of new Pontiacs during the second ten days of December continued to increase with 5008 cars compared to 4969 for the first ten days of December; 4840 for the second ten days of November, and 3080 for the second ten days of December, 1937. Deliveries of 9977 for the first twenty days of December already have exceeded the figure of 9454 for the entire month of December a year ago," Mr. Simpson pointed out. "This year our total for the month should exceed 14,000," he said, "which will be a 50 per cent increase over last December."

Paul G. Hoffman, president of Studebaker Corp. reported the fourth quarter the best of 1938 by a substantial margin and considerably

(Turn to page 10, please)

News of the Industry

GOVERNMENT CONTRACTS

● Awards made for transportation equipment under the Public Contracts Act during the week ended Dec. 24 aggregated $152,979.89. Details follow: Sperry Gyroscope Co., Inc., Brooklyn, control units, $13,135. Bendix Aviation Corp., Eclipse Aviation Div., E. Orange, N. J., airplane equipment, $37,342.05. Curtiss - Wright Corp., Curtiss Propeller Div., Clifton, N. J., hub assemblies, $28,425. Hayes Industries, Inc., Jackson, Mich., wheel and brake assembly, $17,123. General Motors Corp. (Chev. Div.), Detroit, automobiles, $15,151.85; General Motors Corp. (Chev. Div.), Janesville, Wis.; Leeds, Mo.; St. Louis, Mo.; Melrose, Calif.; Roseland, Ga.; Norwood, Ohio; Baltimore, Md. General Motors Corp. (Chev. Div.), Detroit, Mich., automobiles, $18,669.27; General Motors Corp. (Chev. Div.), Leeds, Mo.; Janesville, Wis.; St. Louis, Mo.; Melrose, Calif.; Roseland, Ga.; Norwood, Ohio; Baltimore, Md. General Motors Corp. (Chev. Div.), Detroit, Mich., trucks, $10,606.55; General Motors Corp. (Chev. Div.), Leeds, Mo., and N. Y. General Motors Corp. (Chev. Div.), Detroit, Mich., trucks, $12,527.17.

● The Public Contracts Division of the Department of Labor has announced the following Government awards for the week ended Dec. 31, 1938:

Fairbanks, Morse & Co., New York City, and Fairbanks, Morse & Co., Beloit, Wis., Marine Diesel engine, $43,233. Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo., and Cincinnati, Ohio, boring mill, $46,000. Niles-Bement-Pond Co., Pratt & Whitney Div., Hartford, Conn., profilers, $50,870. W. E. Shipley Machinery Co., Phila., Pa., boring machines, $41,751. Universal Boring Machine Co., Hudson, Mass. and Gisholt Machine Co., Madison, Wis., lathes, $50,-981. Lehmann Machine Co., St. Louis, Mo., lathes, $11,155.40. Bay City Shovels, Inc., Bay City, Mich., dragline excavator, $14,500. Northern Pump Co., Minneapolis, Minn., pumps, $33,776.

Awards for transportation equipment went to: Pittsburgh Screw & Bolt Corp., Pittsburgh, Pa., blade assemblies, $57,000. Bendix Aviation Corp., Eclipse Aviation Div., Bendix, N. J., starter assemb., $36,-936.70. St. Louis Aircraft Corp., St. Louis, Mo., balloon spare parts, $15,589.50. General Motors Corp. (Chev. Div.), Detroit, Mich., trucks, $25,502.12. Adrian Nelson, San Juan, P. R., trucks, $20,985. International Harvester Co., Chicago, Ill. and Mercury Mfg. Co., Chicago, Ill., trucks, $11,033.88.

GLARELESS GLASS

● Glare from reflected light from glass was reported recently to have been removed by a new process developed in General Electric's research laboratory by Dr. Katharine B. Blodgett. By applying thin chemical films to the surface of glass, Dr. Blodgett has been able to nullify or neutralize rebounding light rays with the result that pictures framed with glass so treated appear as though there was no glass at all, regardless of the angle viewed from. The same was said to be true any place where glare is caused by light reflections on glass.

The refractive index of any type glass is easily determined. This known, the process consists of building or attaching to the glass a very thin transparent film of about four millionths of an inch, or exactly one-quarter wave length of light, in thickness. As light falls upon the film, rays are reflected from both the upper and lower surfaces. With the film exactly one-quarter wave length in thickness, those rays coming from the outer or upper surface are equal in intensity and opposite in phase to those rays reflected from the lower surface, thus counteract one another and no light is reflected.

"The process is still in a laboratory stage," Dr. Blodgett explained. "At present it has not reached such a stage that it can be offered the public. However, we are hopeful that we may soon do so."

RADIATOR BOUNTY

● Immediate manufacture of complete automobiles in Australia has not been recommended by the Australian Tariff Board. As a step in that direction, however, the Board has recommended and the Government approved, a bounty on all car radiators assembled in Australia. The decision of the Australian Tariff Board is of importance to Canada because this country supplies a great many of the automobiles used in Australia. Most of these cars, however, are partly manufactured and almost entirely assembled in Australia. There is a substantial Empire preference.

DRYING OVEN

● C. M. Hall Lamp Co. is introducing a new type of gold plated reflector drying oven for use in automotive and other industrial plants. The patent is held by an automobile producer which has licensed Hall Lamp to manufacture the product. Sales will probably be made through electrical equipment companies such as General Electric and Westinghouse.

Operations of Hall Lamp are understood to have been on a profitable basis since October, but the year as a whole is expected to show a loss.

VETERAN CLUB

● Twelve men interested in automobiles, especially those built prior to 1910, have formed a new club which they call the "Veteran Motor Club of America." On Dec. 2, 1938, they named as their first chairman, Professor Dean A. Fales, head of the automobile engineering department of the Massachusetts Institute of Technology. Thomas McKean, Jr., of Ithan, Pa., was elected secretary.

Membership in the new organization will be limited to those who are actively interested in the following tentative objectives: 1. Preserve the early cars and restore them to their original form. 2. Run them on the road, in Veteran Motor Car Rallies, to demonstrate their roadability and state of preservation or restoration. 3. Act as a clearing house for truth in automobile history. 4. Certify year of manufacture of the early car. 5. Be of service along educational and historical lines, not commercial.

Those attending the first meeting were Kirkland H. Gibson, Professor Fales, Paul Cadwell, McKean, Vassas Pierce, John H. Marshall, George H. Waterman, Jr., Cameron Bradley, Benjamin B. Drisko, W. Harold Leathers, M. J. Duryea, son of the late Charles Duryea, and Richard Heath.

Most of these men are collectors of early cars. The Gibson-Waterman collection numbers well over a hundred and several of the others have a dozen or more.

MENASCO PLEASED

Developments in the business prospects of Menasco company since last summer's arrangements for the acquisition of needed capital, and change of company management, have been more satisfactory than was anticipated at that time, it was stated. Its unfilled orders as of a month ago were stated to have totaled more than $400,000.

Labor

Martin Autonomy Demand May Cause Dissension in Union

There are some indications that the next several weeks may very well see another outbreak of dissension within the ranks of organized labor in the automotive industry as the result of events taking place over the year end.

Most significant of these developments was a statement by Homer Martin, president of the United Automobile Workers, that he would again demand complete autonomy for the UAW at the next meeting of the union's executive board in February. Such a move, if carried through, might easily lead to a break between Martin and John L. Lewis, CIO leader, inasmuch as the latter is now considered to have an equal voice with Martin in determination of UAW policies through the four-man coordinating committee appointed last fall in a move to bring peace among all of the warring UAW factions.

Martin's autonomy demand is said to have resulted from the recent action of the UAW executive board in voting $6,000 in back salaries to five officers originally suspended by him and later reinstated by action of the coordinating committee, a move which Martin declares has made the peace pact impotent, and an indication that the union had lost its autonomy.

If Martin follows through with his autonomy demand, observers list a number of possible results. The first might be Martin leading his supporters out of the CIO into the formation of an independent union. Offsetting this development is the possible rejection of Martin and the election of one of his opponents to the presidency at a special convention, presumably Richard T. Frankensteen. A third possibility might be the refusal of the rank and file membership to support the extreme positions taken by Martin and his opponents and the adoption of a middle-of-the-road course under a new leadership. Finally, if a serious split-up within the UAW ranks appears, there is the possibility that administration of the union's affairs will be taken out of the hands of its officers through the appointment of an administrator by the CIO. With each of these developments a possibility there is no doubt that the February meeting of the executive board promises to be of more than passing interest.

The Seventy-Sixth Congress Convenes

No Indication of Adverse Legislation Immediately Affecting the Automotive Industries Exclusively

Convening on Tuesday of the present week, the New Congress has a distinct change of complexion from previous Congresses under the New Deal. Still strongly Democratic in both branches, it is nevertheless peppered more thickly with Republicans and, equally as important, with so-called conservative and embittered Democrats, some of whom were marked for the Administration's abortive purge. Hence, President Roosevelt faces more legislative opposition than at any time during his six years in the White House. Unless the White House develops a strength which is not now apparent radical legislation, with its harassment to business, is not in prospect.

For the automotive industries there is no indication of adverse legislation immediately affecting them exclusively, though efforts may be renewed to enact a law changing the present manufacturer-distributer relationship. There are, however, broader issues, relating to both new and "carryover" legislation, which will come to the floor of Congress and will manifestly have a bearing on the automotive industries. In the category are the national defense program, the Wagner Act, taxation, the Social Security Act, the Neutrality Act, the Reciprocal Tariff Act, patents, etc.

Before attempting to reintroduce his measure designed to outlaw direct sales by manufacurers where the effect is to substantially lessen competition between the manufacturer and his established distributors, Representative Wright Patman, co-author of the Robinson-Patman anti-price discrimination law and other measures written in defense of the independent retail distributor, is sounding out opinion in the House Interstate Commerce Committee, which last session turned thumbs down on the bill. It had the support of the National Automobile Dealers Association and the National Association of Independent Tire Dealers and was described by Patman as "one of the most important fair trade bills pending" last session.

Chairman Martin of the House Interstate Commerce Committee, prompted by the adverse action on the Patman bill, introduced a bill calling for an FTC investigation of motor-vehicle tire manufacturers and their methods of distribution. Its purpose, as was the case in the Withrow resolution, was to uncover alleged monopolistic practices but it was introduced so late in the session that no action was taken. An identical bill is expected to be introduced this session.

The Federal Trade Commission, currently conducting the $50,000 investigation of manufacturer-dealer relationship in the automobile industry under the Withrow resolution, is directed in the measure to report to Congress with recommendations in April. Until the nature of the recommendations is known, it is not possible to indicate what action, if any, Congress may take regarding them.

National defense clearly is to be one of the major subjects before Congress. Though non-partisan, it will be the object of heated debate. The question to be decided is whether it is necessary to create so large a defense as the Administration proposes. In any event the program will call for greater mechanization of the Army and a large addition to the aircraft forces in both the Army and the Navy. Officials have recommended upward of 9280 planes for the Army Air Corps, four times the present goal of 2320 first-line military planes fixed for 1940. Also a large increase in Army tanks is proposed. An expansion of the Navy's program by 1000 planes above the 3000 already authorized has been urged.

Despite demands of industry and of a formidable group in Congress for revision of the Wagner Act, it is doubted that it will be amended to any considerable degree, if at all, at the present session. It is to be kept in mind that the President is opposed to any wide changes in the act and even if Congress did the improbable and enacted broad amendments, the President, with his power of veto, could block them since it is highly unlikely that the necessary two-thirds majority could be mustered to overrule his veto. Even prospects for any amendment to the act will be diminished if the President decides, as it is said he has decided, to withdraw the name of

(*Turn to page 8, please*)

Ourselves and Government

Remand by Circuit Tribunal Unanimously Upheld As Supreme Court Backs NLRB in Ford Suit

A weekly check list of legislative, executive and judicial actions affecting the automotive industries. First appeared in June 25 issue, p. 831. Corrected to Jan. 5.

CONGRESS CONVENED Tuesday of this week. Discussion of proposed legislation of interest to the automotive industries will be found in the news story on this page.

NATIONAL LABOR RELATIONS BOARD

Speaking through Chief Justice Charles E. Hughes, the Supreme Court on Monday sustained the National Labor Relations Board, and denied the contentions of the Ford Motor Co., in a decision which held that the Circuit Court of Appeals has authority to remand cases to the board for further proceedings. The ruling affirmed the Sixth Circuit Court of Appeals which granted a request of the board that the court remand a "cease and desist" order of the board against the Ford company in connection with allegedly unfair labor practices at the company's River Rouge, Mich., plant. The order followed proceedings which grew out of riots at the plant in 1937.

The board asked that the lower court decision be remanded in order that the board might modify and take further steps in the litigation.

Attorneys for the Ford company attacked the board motion and contended that after a circuit court has acquired jurisdiction in a labor case the court has no power to remand the proceedings but must either direct compliance with an order or set it aside as invalid.

The Supreme Court decision was unanimous except for Mr. Justice Owen J. Roberts who did not participate in the proceedings.

GM brief already filed and hearings expected to start sometime this month.

GENERAL MOTORS EXCLUSIVE DEALER CASE. Now taking testimony from company. Hearings will be moved from Brooklyn to New York City. Involves charges that GM dealers are required to deal only in GM parts.

FEDERAL TRADE COMMISSION

FAIR TRADE PRACTICE rules for retail automobile dealers, introduced at public hearings during last NADA meeting in December (see A. I., April 30, 1938), are expected to be submitted to the Commission shortly for approval. Completion of work on several pending cases before the FTC's Trade Practice Division will enable the division to start where it left off several months ago on the automobile rules.

Commissioner Robert E. Freer, of Ohio, New Deal Republican appointed by President Roosevelt on Aug. 24, 1935, took office Jan. 3 as chairman of the FTC for the calendar year 1939. Freer succeeds Commissioner Garland S. Ferguson who served as chairman during 1938.

SIX PER CENT CASE. FTC continues to defer fixing date for final argument in the Ford case. Briefs from the FTC and the company are in. Brief by GM also has been filed. The Commission's brief is overdue. Cases involve FTC allegation that companies engaged in false and misleading representations in advertising advertising plans.

FOB PRICE CASE. Hearings in Ford case, which started Nov. 29 in Detroit and later recessed, may be reopened latter part of January. Proceeding involves FTC charges that price advertising is misleading.

News of the Industry

CASING SHIPMENTS

● According to statistics released by the Rubber Manufacturers Association, Inc., shipments of pneumatic casings during the month of November, 1938, are estimated at 4,442,296 units. This is the largest number shipped during any month since August, 1937, and represents an increase of 7.2 per cent over shipments made in October, and 17.6 per cent over shipments for November, 1937. Shipments to the automobile manufacturers were considerably larger than for any other month this year, and again contributed substantially to the increased sales volume during November. Industry sources indicate that while November replacement sales experienced a seasonal decline as compared with October, they were considerably above November, 1937.

The Association estimates production of pneumatic casings for November at 4,117,457 units, a decrease of less than 1 per cent under October and 32 per cent over November, 1937.

Pneumatic casings in the hands of manufacturers October 31 were estimated at 7,924,114 units. A decrease of 3.8 per cent under stocks as of October 31 and 27.7 per cent less than on November 30, 1937.

PLANT ACTIVITY

● Inland Steel Co. on Tuesday held a ceremony celebrating the completion of its fifth blast furnace. Installation of the new furnace brings the company's pig iron producing capacity up to more than 4000 tons per day.

● Three companies have been added to the list of manufacturers licensed to produce the Phillips Screws: Lamson & Sessions of Cleveland, Scovill Mfg. Co., and Pheoll Mfg. Co. Signing of the contract brings to 12 the number of manufacturers now licensed to produce the new type screw.

● Final installation of equipment in the foundry division of the new $4,000,000 exclusively engine plant of the International Harvester Co. at Indianapolis, is under way and will be completed within a short time. Meanwhile foundry castings have been supplied by other Harvester plants.

Two types of engines will be manufactured in the new complete plant from first casting to completed unit. Capacity will be 680 motors daily, with a planned expansion program providing for a daily capacity of 2000 engines. The foundry division will have a daily capacity of 300 tons of castings, with plans providing for expansion to a daily capacity of 800 tons.

● The Canadian Car & Foundry Co., Ltd., Montreal, has started work in preparation for the manufacture of bomber parts for Canadian Associated Aircraft. They have purchased a large manufacturing plant at Lachine, Que. (near Montreal) for an unstated consideration. Acquisition of these buildings, together with extensive alterations to the main Canadian Car factories nearby, was undertaken to enable the company to carry out its early orders for British Aircraft parts. Alterations to the existing Canadian Car works are expected to cost in the neighborhood of $125,000. The firm has not definitely given up its original plan to build a new factory adjoining the St. Hubert Airport.

AIRCRAFT

● A repeat order from British Airways for two Lockheed 14 standard transports was announced by Carl B. Squier, vice-president in charge of sales of Lockheed Aircraft Corp. The two planes will cost approximately $220,000. One is expected to be delivered this month and the other in March.

British Airways was the first transport company in England to buy equipment from Lockheed Aircraft Corp. Early in 1937 it purchased four of the ten-passenger Electra transports, and subsequently has added two more Electras and six Lockheed 14's, not including the two just announced.

● Boeing has completed assembly at the Seattle plant of its model 307, which is designed to carry 33 passengers in a supercharged cabin. The "Strator-liner" is the first of a fleet of super-charged high altitude land planes being built for Pan-American Airways. The plane will now undergo engine tests. The plane is powered by four 1100 hp. motors. Flying tests are expected to start next week.

● The Navy Department's Bureau of Supplies and Accounts has awarded an $89,130 contract to the Sikorsky Aircraft Division, United Aircraft Corp., Stratford, Conn., for "services and materials."

● Canadian Car & Foundry Co., Ltd., Montreal, will shortly begin production in Mexico of aircraft for the Mexican Government, according to an official announcement issued by L. A. Peto, vice-president and general manager of the company. Earlier this year negotiations were concluded between the Mexican Government and the company for the operation of a factory built some years ago by the Mexican Government. Financial arrangements have now been completed. No definite decision has been reached yet as to what the output of the Mexican plant will be, or what type of plane will be constructed there. The new contract does not mean that Mexico would abandon plans to buy planes wholly manufactured in Canada. It is understood that Canadian Car & Foundry, will manufacture in Mexico a complete aircraft with exception of engines and propellers.

● Rapid progress is being made in the construction of the Douglas Aircraft Co.'s latest addition to its line of commercial transport ships, and the New DC-5 will probably be ready for its first test flight around Feb. 15. The ship is the first new transport design to be completed by Douglas engineers since the DC-4 was completed and is designed to meet requirements of feeder-line operations and commercial flying over routes now only partially covered by transcontinental lines.

40 Years Ago

● The manufacturer who is embarking in the motor vehicle business, and wishes to be on the safe side, should remember the costly nature of the experimental work which brought him to the point of production, the absolute necessity of employing the best workmen and materials for new road machines, which will be put to the most searching tests, and the generous demand for practical motor vehicles throughout the civilized world today. Given these premises he who is fortunate enough to have perfected a practical vehicle is justified in setting for it a price which will allow him a liberal margain. Intelligent purchasers will appreciate the situation, and to them at the outset he must look for patronage. Those who expect to get something for nothing in the motor vehicle line will be doomed to disappointment, as they always are. It is probable that the price of motor vehicles will be raised rather than decreased within the next two years. Count carefully the cost.—From *The Horseless Age*, January, 1899.

Hupp Files Registration Statement

S. L. Davis, president of Hupp Motor Car Corp., announced that the corporation has filed with the Securities and Exchange Commission a registration statement covering 351,714 shares of common stock. Mr. Davis pointed out that it was not necessary to increase the authorized shares. Approximately 96,000 shares are free in the treasury and over 200,000 of the approximate 254,000 outstanding warrants have been surrendered by the underwriters.

A special meeting of the stockholders is being called to approve a loan of $900,000 already authorized by the R.F.C. On the conclusion of its present financing, the corporation will have outstanding a $900,000 first mortgage loan to the R.F.C. and approximately 2,000,000 shares of common stock.

Mr. Davis also stated that the company has plans to sell all of its property not needed, and it is expected that several hundred thousand dollars additional working capital will be obtained from this source. It is estimated that the corporation will, on completion of this financing and sale of property, have available between $1,500,000 and $2,000,000 working capital, in addition to inventories, with which to push the production of its Skylark.

Mr. Davis said that it is hoped to start production on the new Skylark model next month and to have the cars on display in the hands of its dealers in principal cities early in February. An aggressive campaign to close dealer points will be started immediately after the first of the year, he added.

Ammonia as Motor Fuel in France

A recently developed process permits of using an anti-detonating mixture of ammonia and hydrogen as fuel in ordinary combustion engines, the mixture being obtained by starting with liquefied ammonia, of which 1.2 lb. is equivalent to 1 lb. of gasoline. The use of ammonia necessitates an installation which is a little more specialized than that called for by coal gas but, on the other hand, does not call for such a heavy storage tank, the weight of the container being only 1.32 lb. per horsepower-hour, mounting fixtures included, as compared with 0.66 lb. for gasoline. Moreover, the storage of liquefied ammonia in tanks, approved for pressures of 425 lb. per sq. in., in accordance with the French decree of October 11, may be more onerous, but is less vulnerable to attacks than stocks of gasoline.

The new fuel, obtained by means of electrolytically-produced hydrogen, has its origin in the nitrogen of the atmosphere and the water of the cascade. The electrolytic process also yields oxygen in considerable quantity, storage of which may meet the requirements of passive defense.

It is figured that the cost of production of this new motor fuel is very much less than that of gasoline produced synthetically from coal, which latter calls for important installations that would be very vulnerable to aerial attack. Owing to the numerous water powers in France, the ammonia could be produced in a large number of small plants, so located geographically as to be relatively safe from both aerial and terrestrial attack. The gas is used as motor fuel in very much the same way as compressed coal gas and does not call for any highly specialized apparatus.—*Revue des Carburants Francais*, August-September,

Automotive Metal Markets

Steel Market Confident Present Lull Will Be Followed by Substantial Buying Movement

Confidence prevails in the steel market that the present lull in the placing of fresh orders by automobile manufacturers will be followed by a sustained buying movement late this month. Nearly all finishing mills still have a modest backlog of automotive business on their order books, much of their current activity consisting of cleaning up what their remains of commitments booked at lower prices than those now in effect.

This week's rate of employed ingot capacity is reported by the American Iron & Steel Institute at 50.7 per cent with 38.8 per cent in the preceding Christmas week, the increase denoting the normal rebound following the holiday suspensions. Mills in the Detroit area have been operating at 90 per cent of capacity and a moderate downward readjustment pending fresh buying would hardly come as a surprise. Significant is the report that one of the major steel companies is finding it difficult to keep its continuous rolling mills manned by skilled craftsmen, so that it was necessary to recruit workers from other departments and gradually train them in the intricacies of automatic, continuous equipment. At present automobile manufacturers anticipate their flat rolled steel needs by about a month.

Recent reports of important additions to the number of continuous mills, which undoubtedly have considerably increased the industry's sheet and strip steel capacity, cause some purchasing agents to feel that the time between issuing specifications and deliveries might be shortened without risking costly delays in scheduled assemblies, but in view of the paucity in the supply of skilled continuous mill operatives, steel company sales managers suggest that orders and specifications be issued in time to allow for unforeseeable delays. Considerable agitation has developed in the ranks of radical labor spokesmen against the mechanical progress of the rolling mills in the last few years, and labor relations continue to be more or less of a vexing problem.

A decline of 2 cents in the rate of Sterling exchange on the first business day of the new year made for hesitancy in the tin market. Spot Straits tin closed the old year at 46⅝ cents and there had been quite a little buying by consumers at around that level. Several successive days of dips in Sterling exchange caused buyers to assume a waiting attitude. The market on Tuesday was nominally quotable at 46½ cents.

Lower Sterling quotations also exerted a depressing influence on the price of copper, the export price receding to 10.45 cents. Although mine producers and custom smelters continue to quote spot electrolytic at 11¼ cents, metal was offered in the outside market at 10⅝ cents.

Secondary No. 12 aluminum is offered at somewhat lower prices in the Detroit market, reductions ranging from ½ to ¾ cents per pound. —W. C. H.

Passenger Car Exports Continue Increase

Exports of passenger cars and chassis were nearly doubled in November as compared with October of 1938. As indicated in the table below, this country exported 20,079 passenger cars and chassis in November. This, however, was a decrease of approximately 18 per cent from the exports of November, 1937. Cumulative exports for the 11 months ended November, 1938, also showed a decrease, approximately 30 per cent, from the first 11 months of 1937.

	NOVEMBER 1938		NOVEMBER 1937		ELEVEN MONTHS ENDED NOVEMBER 1938		1937	
	No.	Value	No.	Value	No.	Value	No.	Value
EXPORTS								
Automobiles, parts and accessories		$ 25,416,941		$ 29,799,719		$ 241,228,021		$ 307,135,229
PASSENGER CARS								
Passenger cars and chassis	20,079	11,829,772	24,491	15,304,295	140,409	87,150,685	202,022	118,539,304
Low price range $850 inclusive	17,775	9,451,325	21,334	12,045,614	122,820	68,235,134	183,767	98,615,091
Medium price range over $850 to $1,200	1,923	1,771,873	2,834	2,655,284	14,993	14,498,363	15,351	14,499,644
$1,200 to $2,000	331	488,831	202	298,249	2,076	3,079,160	2,057	3,139,306
Over $2,000	50	117,743	121	303,148	520	1,338,028	847	2,285,263
COMMERCIAL VEHICLES								
Motor trucks, buses and chassis (total)	8,856	4,597,747	11,444	7,099,544	101,965	65,028,182	142,976	86,770,947
Under one ton	1,671	630,801	934	396,559	14,851	6,254,176	17,916	7,244,132
One and up to 1½ tons	6,244	2,910,880	7,793	3,975,540	69,706	38,214,377	92,948	45,952,139
Over 1½ tons to 2½ tons	585	474,432	1,626	1,298,491	10,787	8,728,322	22,905	18,081,718
Over 2½ tons	314	547,760	1,040	1,364,381	5,422	10,682,442	7,900	14,429,583
Bus chassis	44	33,874	51	64,573	1,199	1,148,865	1,307	1,063,375
PARTS, ETC.								
Parts except engines and tires								
Automobile unit assemblies		4,753,234		2,860,842		41,833,623		48,384,498
Automobile parts for replacement (n.e.s.)		2,987,569		3,109,678		33,558,576		35,003,117
Other automobile accessories (n.e.s.)		410,305		510,992		3,476,603		4,481,932
Automobile service appliances		374,888		524,304		5,260,216		5,978,615
Airplanes, seaplanes and other aircraft	45	1,164,876	76	3,135,979	774	35,011,473	592	20,540,804
Parts of airplanes, except engines and tires		2,006,878		1,421,38		20,055,219		10,197,23
INTERNAL COMBUSTION ENGINES Stationary and Portable								
Diesel and semi-Diesel	48	211,220	52	244,721	485	1,986,871	799	2,150,999
Other stationary and portable								
Not over 10 hp.	1,102	69,336	3,435	142,845	14,800	800,965	18,973	1,053,420
Over 10 hp.	96	54,396	221	131,868	3,093	1,395,938	3,129	1,530,927
Engines for:								
Motor trucks and buses	1,520	161,496	826	102,115	22,600	2,503,331	28,602	2,844,577
Passenger cars	3,818	314,551	5,572	331,780	35,865	2,923,742	75,349	5,058,577
Aircraft	107	822,240	97	649,973	1,181	7,067,096	968	5,433,388
Accessories and parts (carburetors)		222,929		216,249		2,534,478		2,533,487
IMPORTS								
Automobiles (dutiable)	48	28,667	107	57,569	540	350,730	1,843	1,106,175

News of the Industry

WHAT ARE THEY DOING?

ARTHUR B. NEWHALL of Watertown, Mass., has been elected executive vice-president in full charge of all production and sales of the B. F. Goodrich Co. This action follows the election of Mr. Newhall to the board of directors in October at which time he was named as vice-president of the company. Mr. Newhall is president and director of the Hood Rubber Co. at Watertown, a wholly-owned subsidiary of the Goodrich Co.

JOHN F. MAURO and **ED. G. WILLEMS** have left for Europe and the Far East, respectively, on their regular trips representing Mack Trucks, Inc.

R. D. KOENITZER has resigned as chief engineer of Perfex Corp., Milwaukee, Wis., to accept a position as sales engineer with the Young Radiator Co., Racine, Wis.

DR. DUGALD C. JACKSON, professor emeritus of electrical engineering, Massachusetts Institute of Technology, has been awarded the 1938 Edison Medal of the American Institute of Electrical Engineers. The presentation will be made on the evening of Jan. 25, 1939, during the annual winter convention of the Institute, which will be held in the Engineering Societies Building, New York.

The appointment of **SIDNEY A. WOODMANCY** as manager of manufacturing for Oldsmobile has been announced. He succeeds **J. J. CARTER,** who has been granted a leave of absence because of ill health. Mr. Carter expects to return to special assignment work with General Motors as soon as his health permits.

F. E. BISHOP has been appointed general sales manager of the Graham-Paige Motors Corp. He was general manager of the Packard Berk Co., Pittsburgh distributors.

C. M. BISHOP, Brooklyn, N. Y., Dodge-Plymouth dealer, heads the recently appointed Factory-Dealer Relations Committee of the National Automobile Dealers Association.

ERNEST NIEDERER, who recently resigned as works manager of Clearing Machine Corp., has been appointed works manager of the Verson Allsteel Press Co.

W. H. EISENMAN, secretary of the American Society for Metals, has been reelected president of the Association of Exhibit Managers. **F. C. J. DELL** was appointed secretary-treasurer.

D. BUTTLES has been appointed national sales manager of Cummins Engine Co.; his headquarters will be at the home office.

J. H. BUNTING, director of advertising and publicity for Sieberling Rubber Co., resigned to become associated with the Akron Aircraft Co., which will develop a new type of safety airplane invented by **HOWARD** and **JOSEPH FUNK** of Akron.

Promotion of **R. J. MINSHALL,** vice president of engineering, to the position of vice president and assistant general manager of the Boeing Aircraft Co. has been announced. **JAY MORRISON,** a Seattle banker, has been appointed assistant to the president and **JOHN KYLSTRA,** acting chief engineer, was made chief engineer.

C. R. COLLINS has been appointed regional manager for the central region of Hudson Motor Car Co. sales zone.

DAVID E. ANDERSON, until recently chief engineer of the Bohn Aluminum & Brass Corp., has joined the Holley Carburetor Co. in the capacity of research engineer.

W. G. HANCOCK, sales manager of the automotive parts department of McCord Radiator & Mfg. Co., has been appointed general sales manager. He will direct sales in all departments.

Expansion of its domestic sales organization through the establishment of an office at Washington, D. C., was announced by the Lockheed Aircraft Corp. **L. V. KERBER** has been appointed to direct activities as factory representative at the Capitol. Mr. Kerber recently resigned as chief of the aircraft airworthiness section of the Bureau of Air Commerce.

PHIL. J. DUGGAN has been appointed sales manager of Industrial Acceptance Corp., Ltd., Montreal. Mr. Duggan has been connected for over 20 years with the automotive industry. He was for some time sales manager for Durant and Dominion Motors, Ltd., and later general manager of the Reo Motor Co. of Canada, Ltd.

WILLIAM T. CRUSE has been named director of sales of the Celluloid Corp.'s recently created Molding Powder Division.

ARTHUR B. NEWHALL, president of the Hood Rubber Co., has been elected executive vice-president of the B. F. Goodrich Co., following his recent election as a director and member of the executive committee.

Norton Co. of Worcester, Mass., announces changes in the headquarters sales organization of its abrasive division. **G. A. PARK,** formerly assistant sales manager, has been appointed eastern sales manager. **R. M. JOHNSON,** formerly sales engineer, has been appointed western sales manager. **A. G. GREEN** of the research laboratories will take over the position of sales engineer formerly held by Mr. Johnson. **W. R. MOORE,** as the newly appointed general sales manager, will direct the activities of these three men. **W. T. MONTAGUE** has been appointed assistant vice president. He will continue to supervise the staff activities of the sales department.

G. H. HEDRICK, chief engineer of the Gem Manufacturing Co., has been appointed chief engineer of the muffler division of Maremont Automotive Products, Inc.

EMMET SHEAHAN, in addition to his present position as operations manager of the United States Rubber Co.'s Detroit and Indianapolis plants, has been named general manager of the company's new automotive division.

FRANK SCHUBERT has been appointed assistant general manager of the Houde Engineering Corp. to succeed the late **EDWARD L. VALANCE.** Mr. Schubert has been associated with Houde for two years in a sales executive capacity. Previously, he was assistant to the president of the Bearings Corp. of America.

GILBERT RHODE, industrial designer, has been retained by the Röhm & Haas Co., Inc., Philadelphia, as consultant and promotional adviser for the company's Plexiglas and Crystalite products. Mr. Rhode, who has had wide experience in product design, will promote the use of Plexiglas and Crystalite in the decorative fields.

The 76th Congress

(*Continued from page 5*)

Donald Wakefield Smith for reappointment as a member of the National Labor Relations Board. Smith is strongly opposed by the AFL as well as by important members of the Senate. It was the plan to reopen the Wagner Act when the name of Smith came up for Senate confirmation. If his name is withdrawn and a satisfactory appointment is proposed the Administration would probably avert a great deal of fire against the act, provided he can placate the AFL, which charges the board is strongly biased toward CIO. This could be done if the board modified its regulations to assure continuance of AFL contracts and wider recognition of elections by craft, rather than industrial unions. At the same time such a modification likely would force the board from the frying pan into the fire inasmuch as it might then arouse CIO hostility.

With respect to taxes, it is expected that there will be no broad program at the present session of Congress. Rather, it is believed, it will reenact the expiring excise taxes, leave the undistributed profit taxes stand as they are, probably abolish tax exemption of Federal and state securities, and do nothing about incentive taxation.

Indications point to liberalization of the Social Security Act, including some of the recommendations of the Social Security Advisory Council to increase old age pensions, employers, employees and the Federal Treasury each to contribute one-third of the additional cost.

In his message to Congress on Tuesday President Roosevelt indicated he might ask liberalization of the Neutrality Act. This apparently would mean expanded shipments. Speaking of the Act the President said, "Laws may operate unevenly and unfairly—may actually give aid to an aggressor and deny it to a victim."

A move also will be made to take from the executive branch the power to promulgate reciprocal tariff agreements, but such an effort also in all probability will be unsuccessful.

The Temporary National Economic Committee will make a preliminary report to the present session of Congress. It may recommend straightening of the patent laws but at its hearing it gave automobile manufacturers a figurative pat on the back for their liberal patent

policies so they will escape any attack from the committee. Any recommendation it may make is expected to propose restricted group control of patents.

Finally, the committee may give birth to a Bureau of Industrial Economics, which President Roosevelt in his message of April 29, 1938, proposed for streamlining industry, and which no less than three Government bodies are trying to grab—the Federal Trade Commission, the Department of Commerce, and the Department of Justice. It is reported that the TNEC, finding that it can hardly scratch the surface of investigating the nation's economic structure in the two years allotted to it, will ask Congress to establish the bureau as a permanent body to carry on the job. The President proposed that it be set up in the FTC, but since he has headed the Department of Commerce and the Department of Justice with special favorites, Harry L. Hopkins, and former Governor Frank Murphy of Michigan, respectively, it may be he is willing to consider the pleas of these departments. In urging the bureau, the President emphasized the necessity of bringing production into line with consumption and referred specifically to the automobile industry.

BUSINESS IN BRIEF

Written by the Guaranty Trust Co., New York

The year-end dip in industrial activity as a whole was moderate; and in several lines, notably shoes and textiles, production schedules were reduced but little or not at all. The *Journal of Commerce* index of business activity for the pre-Christmas week ended December 24 dropped to 83.1 from a revised figure of 90.0 for the preceding week, as against 65.7 a year earlier.

The output of electricity by the light and power industry in the week ended December 24 rose more than the seasonal average to a new record 13.3 per cent above the comparable 1937 figure.

Railway freight loadings in the same week declined by less than the seasonal amount to 574,462 cars, against 457,821 cars a year earlier, registering the sixth consecutive advance from the corresponding loadings in 1937. The Dow-Jones seasonally adjusted index of loadings, 80.1, compared with the year's peak of 81.9 reached three weeks earlier.

Lumber production in the same week declined by more than the seasonal average, but was 58 per cent above the corresponding 1937 figure; shipments registered a comparable gain of 62 per cent, and new orders a gain of 27 per cent.

Engineering construction contract awards in the final week of the year, as reported by the *Engineering News-Record*, 32 per cent above the preceding year-end figure, brought the 1938 total to a level 14.5 per cent above that of 1937.

Professor Fisher's index of wholesale prices last week advanced to 80.3 from 79.7 for the preceding week, regaining the average level that had been registered during October.

Reserve balances of member banks of the Federal Reserve System in the week ended December 28, countering the sharp dip of the preceding week, increased by $105,188,000, while estimated excess reserves rose $90,000,000 to a total of $3,070,000,000. Total bills discounted by the Federal Reserve banks were reduced by $1,313,000, with industrial advances gaining $155,000.

The General Motors-Cornell World Price Index of Forty Basic Commodities

The General Motors-Cornell World Price Index of 40 basic commodities for the week ended Dec. 24 rose 0.1 point from the previous week's 30-year low figure to 60.5. The United States index in gold decreased 0.2 point.

The index numbers, when 1910-1914 equals 100, follow:

	World in gold	United States in gold	United States in currency
1937			
April (high)	78	83	141
December (low)	70	67	113
1938			
November	60.8	62.7*	106.2
Weeks ended:			
Nov. 26	60.4	63.1	106.8
Dec. 10	60.5	62.6	106.0
Dec. 17	60.4	62.6	105.9
Dec. 24	60.5p	62.4	105.7

The indexes for United Kingdom, France, Canada, Belgium and Sweden rose slightly, while the indexes for Australia and Finland showed slight decreases. The index figure for New Zealand was unchanged.

p—preliminary. *—revised.

New Passenger Car Registrations

An increase of new passenger car registrations during November of approximately 68 per cent over October brought the month's total to 200,853. November 1938 exceeded November 1937 new registrations by approximately 2.5 per cent. This is the first time that the figures for any month have shown an increase over the same month in the previous year since October 1937 which exceeded October 1936.

For the 11 months of 1938 the total was 1,664,051, a decrease of about 50 per cent as compared with the same period in 1937.

	November 1938	October 1938	November 1937	ELEVEN MONTHS 1938	ELEVEN MONTHS 1937	Per Cent Change, 11 Months 1938 over 1937	Per Cent of Total Eleven Months 1938	Per Cent of Total Eleven Months 1937
Chevrolet	52,852	22,913	59,104	413,208	721,729	— 42.8	24.83	21.84
Ford	28,672	13,959	15,512	325,774	734,075	— 55.6	19.58	22.22
Plymouth	32,687	29,897	26,913	251,636	439,502	— 42.7	15.12	13.30
Buick	19,385	18,155	18,609	147,934	190,098	— 22.1	8.89	5.75
Dodge	11,028	3,578	14,817	87,840	244,464	— 64.0	5.28	7.40
Pontiac	12,158	6,064	12,912	84,817	202,428	— 58.0	5.10	6.13
Oldsmobile	11,382	3,159	10,724	78,377	178,881	— 56.2	4.71	5.41
Packard	4,857	4,613	5,727	44,953	90,373	— 50.2	2.70	2.74
Chrysler	4,345	1,769	6,792	39,732	86,051	— 53.9	2.39	2.60
Studebaker	5,077	5,405	4,194	37,113	66,541	— 44.2	2.23	2.01
Hudson	4,718	2,509	4,966	36,200	85,740	— 57.8	2.18	2.59
De Soto	3,257	1,388	5,204	30,431	70,445	— 56.8	1.83	2.13
Nash	1,909	1,620	3,664	28,119	66,889	— 58.0	1.69	2.02
Lincoln	1,455	816	1,422	15,084	23,225	— 35.4	.91	.70
La Salle	2,235	1,246	1,928	13,363	27,398	— 51.4	.80	.83
Willys	805	1,139	2,497	11,895	49,455	— 75.9	.71	1.51
Cadillac	1,258	493	622	9,241	10,596	— 12.7	.55	.32
Graham	308	188	573	3,733	13,197	— 71.7	.22	.40
Mercury	2,317			2,317			.14	
Hupmobile	39	46	126	958	297	+222.0	.06	.01
Bantam	58			618			.04	
Fiat	18			313			.02	
Miscellaneous	33	96	163	395	2,747	— 85.5	.02	.09
Total	200,853	119,053	196,469	1,664,051	3,304,131	— 49.5	100.00	100.00
Chrysler Corp.	51,317	36,632	53,726	409,639	840,462	— 51.3	24.62	25.44
Ford Motor Co.	32,444	14,775	16,934	343,175	757,300	— 54.7	20.62	22.92
General Motors Corp.	99,270	52,030	103,899	746,940	1,331,130	— 44.0	44.89	40.29
All Others	17,822	15,616	21,910	164,297	375,239	— 56.2	9.87	11.35

News of the Industry

PUBLICATIONS AVAILABLE

Two new catalogs have been issued by the Landis Tool Co. No. J-538 describes the **14 in. type C hydraulic universal grinders** and No. D-38 covers the **6 in. type C plain hydraulic grinders***

Johnson Motors, division of Outboard Marine & Mfg. Co., has published a new folder covering the 1939 line of "Sea Horse" **outboard marine engines.***

The Copper Development Association, London, has just published a book entitled **"Aluminum Bronze."***

The Resinous Products & Chemical Co., Inc., has issued a booklet on Tego-Bonded construction, its method of producing **plywood and related materials.***

A 48-page catalog has been published by the Paasche Airbrush Co. listing and describing its products for use in **air-finishing.***

Joseph T. Ryerson & Son, Inc., has released a booklet covering its line of **steel and allied products.***

Available at 10 cents per copy is a publication, **"Machine and Tomorrow's World,"** prepared by the Public Affairs Committee, Inc., of New York City. Address is 8 West 40th St.

Catalog N-95-163 of the Leeds & Northrup Co. describes instruments for determining **condensate purity in steam plants.***

A handbook covering **truck and trailer size and weight restrictions for 1939** has been published by the Four Wheel Drive Auto Co.*

The Black & Decker Mfg. Co., Towson, Md., has published its 1939 catalog on the Black & Decker line of **portable electric tools.***

The American Chemical Paint Co., Ambler, Pa., has issued a pamphlet in which **spray-granodizing,** a surface treatment for steel, is described.*

A new folder prepared by the Brown Instrument Co., Philadelphia, Pa., is devoted to the company's complete line of indicating, recording and controlling **instruments** for measuring and controlling temperatures, pressures, flows, liquid levels and humidity.*

Bowen Products Corp., Ecorse-Detroit, Mich., has issued catalog No. 10 covering its line of Empress **lubricating devices and pressed metal parts.***

Considerable information on the **cleaning of automobile upholstery fabrics** will be found in a booklet called "On the Spot" recently brought out by L. C. Chase & Co., New York.*

* Obtainable from editorial department, AUTOMOTIVE INDUSTRIES. Address Chestnut and 56th Sts., Philadelphia.

AFTER THE SHOWS

● Statistics of the ninth annual Automotive Service Industries Show, held last month in Chicago, as released by the Motor and Equipment Manufacturers Association, reveal total attendance to have been 15,526. This was the peak figure for attendance in the show's history. Attendance at the 1937 show was 13,045; at the 1936 show 13,476.

Exhibitors at the 1938 show numbered 355 as compared with 380 the previous year and 357 in 1936. Motor and Equipment Manufacturers Association manufacturers exhibiting numbered 166 for the 1938 show. National Standard Parts Association manufacturers exhibiting numbered 134. Manufacturer members of both associations exhibiting numbered 35.

● In view of the enthusiastic acceptance of the national motor truck show by the industry, it was announced by J. F. Winchester, president of the National Motor Truck Show Corp., that the show would be operated on an all-year-round basis with permanent offices established in the Hotel Pennsylvania, New York City.

S.A.E. MEETING

● National defense is the theme of the Society of Automotive Engineers' Annual Meeting being held at Detroit's Book-Cadillac Hotel, Jan. 9-13. Advance reservations indicated that more than 2500 of the industry's leading executives, engineers and designers will attend, according to John A. C. Warner, secretary and general manager of the Society.

B. C. Heacock, president of the Caterpillar Tractor Co., will be toastmaster at the Annual Meeting Banquet which will climax the National Defense Day program. He will introduce Brig.-Gen. C. T. Harris, Jr., assistant to the chief of ordnance, who is to discuss "Industrial Mobilization for National Defense." With him on the program will be SAE President C. W. Spicer, vice-president, Spicer Manufacturing Corp., and President-Elect W. J. Davidson, Diesel Division of General Motors Corp. The banquet is open only to SAE members.

In all, 33 topics will be discussed at the 20 sessions of this meeting. Passenger-car chassis, body and tires; truck and

CONVENTIONS AND MEETINGS

SAE Annual Meeting, Detroit....Jan. 9-13

American Foundrymen's Association, Forty-third Annual Convention, Cincinnati .....May 15-18

SHOWS AT HOME AND ABROAD

National Motor Boat Show, New York, Jan. 6-14

Seattle, Wash., Automobile Show, Jan. 9-15

Belgium, Brussels, Automobile and Bicycle Salon .....Jan. 11-22

Berlin, Germany, Automobile Show, Feb. 17-March 5

A.S.T.E. Machine and Tool Progress Exhibition, Convention Hall, Detroit .....March 14-18

Yugoslavia, Belgrade, Automobile Salon .....April 1-8

Great Britain, London, Automobile Show .....Oct. 12-21

Great Britain, London, Commercial Automobile Transportation Show, Nov. 2-11

Great Britain, Glasgow, Scotch Automobile Show .....Nov. 10-18

Italy, Milan, Automobile Salon, Oct. 25 to Nov. 11

Industry Looks for Better Year

(*Continued from page* 3)

ahead of the same period in 1937. David R. Wilson president of Willys-Overland Motors, Inc., stated: "Sales of Overland cars in the late November and early December period of this year were more than double those of the same period of 1937." Reports of other automobile executives were in the same tenor.

A rapid rise in automobile buying during the late fall forecasts an output of 3,500,000 cars and trucks during 1939, according to a report of the Automobile Manufacturers Association, unless there should be reversal of the current trends of business generally. This would represent an advance of one-third over the year just closing.

From another quarter comes the statement that the industry's showing is expected to be better in the first quarter than in the one just ended, although volume may be no larger. Production schedules had to be stepped up in recent months to meet an unexpectedly large demand, and, in some instances, little attention could be paid to efficiency.

Increases in the January production of Ford, Mercury and Lincoln-Zephyr cars have been announced. Ford, Mercury and Lincoln-Zephyr production in domestic and Canadian plants during the month is expected to exceed 94,000 units.

A consensus of the industry's outlook may be expressed in these following statements made by a few automotive executives. Says Alfred P. Sloan, Jr., chairman of the General Motors Corp.: "It seems reasonable to expect that 1939, as a whole, will be a somewhat better business year than 1938 has been. This belief is based on expectation that recovery will extend well into '39.

Said K. T. Keller, president of the Chrysler Corp.: "Judging from encouraging public response to the automobile industry's 1939 models and the velocity of turnover of the new cars, optimism tempered with caution is justified in any attempt at appraisal of prospects for the new year. As for the longer-term outlook for the automobile industry, there is good basis for optimism."

President Curtice of Buick stated: "We go into the new year with production rolling at a steadier rate than at any time in 10 years, and our January-February output will be at levels well above the usual point for this period. Inventories of both raw and fabricated materials are lower than at this time a year ago. Stocks of both new and used cars in the

field also are substantially under last year and turnover is at a much faster pace."

Predicting that the current seasonal letdown in the automobile business will be of shorter duration and less severe than in former years, C. P. Simpson, general sales manager of Pontiac Motor Division, looks forward to big business in the coming spring. "It has been a long time," he said, "since this industry of ours entered a new model year under such favorable circumstances as we find now. Estimates place the total number of new car sales for 1938 at close to 2,700,000, which is not too bad in view of the gloomy outlook earlier in the year. That 1939 will be definitely better than 1938 is quite certain. However, we cannot expect it to be another 1929 or 1937."

In Canada, too, the outlook, as expressed by men in the automotive industry, is bright. Wallace R. Campbell, president Ford Motor Company of Canada, Ltd., Windsor, Ont., is of the opinion that in Canada "we are fortunate to be in a position to enter upon a new year with confidence. Barring international complications beyond our control, there are reasonable indications that Canadian business will show renewed impetus in 1939."

"Quite apart from the natural tendency at this season to take an optimistic viewpoint, there is reasonable ground for the belief that 1939 will be a much brighter year than 1938," states H. J. Carmichael, vice-president and general manager, General Motors of Canada, Ltd., Oshawa, Ont.

"Favorable reception of the new 1939 automobiles at the motor shows and the readiness with which the buying public have absorbed the full production of our factories would suggest a good year's business ahead," stated John D. Mansfield, president, Chrysler Corp. of Canada, Ltd., Windsor, Ont. "A sales volume for 1939 at least as good as that of 1938, and probably better, would seem to be a reasonable expectation."

Paul Kleiber

Paul Kleiber, retired truck manufacturer, and a prominent figure in San Francisco's automotive industry for nearly half a century, died December 19, after a brief illness.

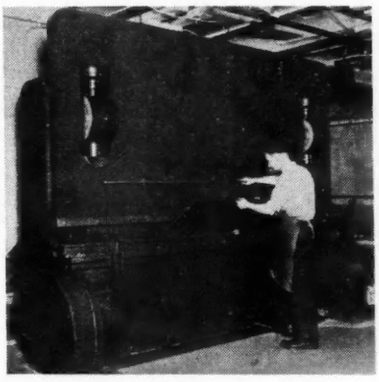
Mr. Kleiber came to San Francisco in 1890, shortly after which he began making horse-drawn vehicles. Later, as the automobile was developed, he turned to the manufacture of motor trucks bearing his name. He retired two years ago.

TOOLS OF TOMORROW

Steel Press Brake

. . . Ferracute Co. Acquires Manufacturing Rights for Rafter Machine

Manufacturing rights for the Rafter steel press brake have been acquired by the Ferracute Machine Co., Bridgeton, N. J.; and the Bryant Machinery & Engineering Co., Chicago, has assumed exclusive selling rights and will market the line through its local dealers. A patented design is employed in the machine wherein the ram is pulled downward into the work, power being applied from below the dies.



Rafter steel press brake

The patented design, according to the manufacturer, eliminates heavy end housings tied together at the top with a heavy crown. Reduction in size and weight of end housings, absence of a crown member and removal of drive mechanism from the upper part of the machine eliminate dead weight and permit concentration of weight and strength in the working parts where they are most effective in resisting deflection and producing accurate work. Ram and bed members are increased in vertical depth, minimizing deflection and, also, overall height is reduced.

All drive mechanism is either attached to or contained within the bed of the machine. The motor is connected to the drive shaft through multiple V-belts and a friction clutch. Generated, cut tooth gears, enclosed in oil-tight housings, connect the drive and intermediate shafts with individual eccentrics at each end. These eccentrics actuate the connecting rods which pull the ram downward into the work. C-shaped steel connecting rods are so mounted between eccentrics in the bed and adjusting screws in the ram that they exert practically a straight down pull on the ram. The manufacturer points out that this construction eliminates side thrust to the ram and assures accurate work.

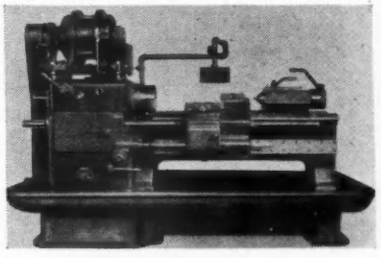
A clamp is built into the ram for holding the upper die. This clamp will hold straight-shank, L-shank or T-shank dies. The lower die holder is provided with a key fitting in the groove in the bed, insuring exact die alignment at all times.

Lathe

. . . Seneca Machine Has Simplified Changeover Mechanism for Varying Carriage Stroke

Seneca Falls Machine Co., Seneca Falls, N. Y. has announced the model "LR" Lo-Swing, a fully automatic, cam-operated lathe embodying a simplified change-over mechanism (patent applied for) with which length of carriage stroke may be varied.

The LR's field includes practically all work within its capacity—5½-in. swing and up to 46 in. between centers. There are no clutches in the feed train. This design, says the manufacturer, provides a machine which is easy to service and which, once set, cannot get out of time. All rotating shafts are equipped with anti-friction bearings. Carriage ways are of hardened steel.



Seneca's Model "LR" Lo-swing lathe

The model LR can be equipped with either direct V-belt drive to the spindle for high speed, fine finishing cuts, or equipped with a geared drive, with pickoff gears, for slower roughing cuts. The LR may also be equipped with a third slide (overhead) as well as additional back squaring attachments, carriages and carrige slides.

News of the Industry

A.S.T.E. EXPANSION

• Two more chapters will be chartered by the American Society of Tool Engineers, in the next few weeks, it is reported. One of these, at Elmira, N. Y., will take in the southern "tier" in New York State, while the second one will be chartered in Peoria, Ill.

A new chapter in Moline, Ill., was chartered last month. The two additional chapters will bring the total to 26, scattered throughout the Industrial East and Middle West.

STATISTICAL SERVICE

• Announcement was made by the Department of Commerce that, as the result of recommendations by a committee appointed by Secretary Roper to consider possible improvements in the current business statistical services of the Department, the Bureau of the Census will now be responsible for the collection, tabulation and release of the basic tables on current statistics of retail and wholesale trade and manufacturing, while the Bureau of Foreign and Domestic Commerce will analyze, interpret and publish the final reports. Previously, each of the Bureaus performed both functions in certain fields.

The new arrangement applies only to business and industrial statistics gathered at intervals under one year and does not affect the periodic industrial and business censuses. Special studies conducted by either Bureau do not come within the scope of the policy change.

ADVERTISING NEWS NOTES

• The Spring Conference of the Association of National Advertisers will be held May 10-12 at Rye, N. Y. Annual meeting of the association will be held at Hot Springs, Va., Sept. 13-16.

• Buick will sponsor the broadcast of the Joe Louis-John Lewis heavyweight championship fight scheduled for Jan. 25 in Madison Square Garden, N. Y. The fight will be described over the red and blue NBC networks, using the facilities of 157 stations. This is said to be one of the largest sports hookups on record.

• Rotary Lift Co. has appointed Van Auken-Ragland to handle all its direct mail and publicity advertising in all fields.

• Glenn Griswold Associates, public relations counsellors specializing in the industrial field, have been retained by The Studebaker Corp.

Production

(*Continued from page 1*)

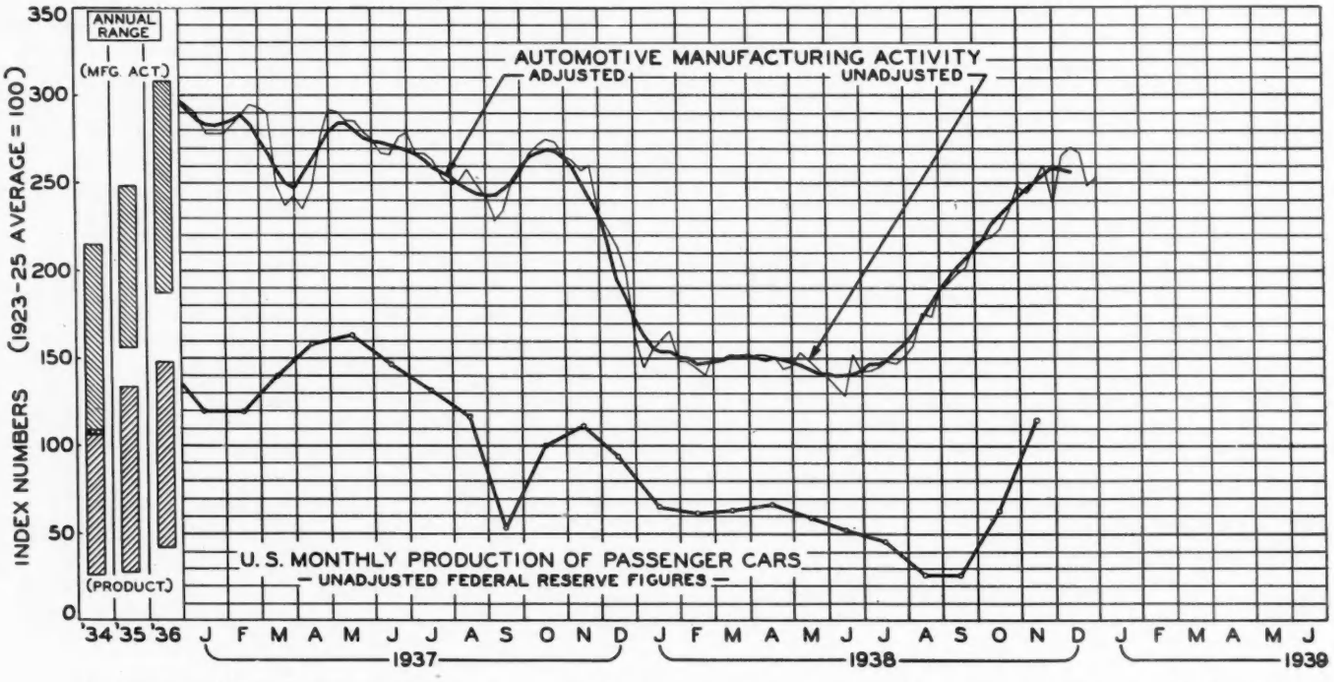
100,000 units over January, 1938.

General Motors divisions were expected to contribute more than 32,000 units to the week's total followed by Ford and Chrysler with more than 18,000 each. Among the independents Hudson and Nash were in the lead with several other important independents expecting to resume final assemblies during the next week.—J. A. L.

Award to Alfred V. de Forest

Professor Alfred V. de Forest of Massachusetts Institute of Technology has been honored with the Sylvanus Albert Reed award by the Institute of the Aeronautical Sciences for his invention of the Magnaflux method of testing parts made of magnetic material for flaws. The award is made annually by the Institute for a notable contribution to aeronautical engineering.

Automotive Activity Index 91 Points Above Last Week in 1937



A change will be noted in the appearance of the chart of automotive manufacturing activity this week. In addition to space provided for projection of index figures for 1939, the chart has been modified so that both production figures and the index of automotive manufacturing activity appear on the same scale. The production figure is now taken from the Federal Reserve monthly index which takes the average production of the years 1923-25 as its basic point to equal 100. The automotive manufacturing activity index figures, adjusted and unadjusted, are now also based on the activity of the 1923-25 period taken as 100.

In the two weeks since publication of the last issue of *Automotive Industries*, the unadjusted index of automotive manufacturing activity fell 19 points from 268 (the unadjusted index figure for the week ending Dec. 17) to 249 for the week ending Dec. 24. The following week, ending Dec. 31, the index rose three points to the most recent posting of 252. Foremost factors influencing the downward turn seem to have been plant closings for holidays, year-end inventories and schedule readjustments.

For the first time since the end of May, 1938, the adjusted index line takes a downward turn, falling off two points to reach the 257 mark.

The Federal Reserve index for November production is at 115, four points above the same month in 1937.

Just Among Ourselves

Economists With Us

TEN years ago most of the economists who were studying the automobile industry were on the outside of it. Today, some of the ablest of them are on the inside. This profound reflection is offered after a week spent in Detroit attending meetings of the American Economic Association, the American Statistical Association and other groups which cluster under the aegis of the Allied Social Science Associations.

This fact was apparent also to Yale's great Irving Fisher, who remarked after a brilliant tripartite review of automobile economics with its satellite discussion, that "no greater galaxy of stars has been present at any series of meetings in my nearly 50 years of attendance."

The sessions on automobile economics, he said, were "a monument to what industry can contribute to science."

Price Control Is No Control

DURABLE consumers' goods, which is the economist's name for the class of things which includes the automobile, was discussed on a dozen platforms during the social science meetings. The effect of price policy on the rise and fall of automobile sales, in its abundance, reflected current interest in the subject on the part of government, business, and economists, and the many contributions which have been made to its literature during the past year.

On this subject, the paper by Stephen M. DuBrul of General Motors contained about as succinct a statement as could be found. Said Mr. DuBrul:

"The ability of the automobile industry to control prices within economic limits is inadequate to produce significant effects on demand." The phrase "within economic limits" refers, of course, to the possibility of making a profit. Mr. DuBrul's charts showed that even a small price cut would eat into the unstable profit margins which distinguish volume operations.

If it were assumed that price changes great enough to control the demand curve were indicated, such a policy would imply building up gigantic corporate reserves during the relatively higher prices of good years in order to hold production at the optimum point during lean years when the necessity for lower prices would take a heavy toll from sub-profit margins.

The last paragraph is a paraphrase of another of Mr. DuBrul's conclusions, and it seemed to us to be a polite (and soundly documented) way of telling some people in Washington that you can't eat your cake and have it, too.

What Makes the Sales Go 'Round

PAPERS on automobile economics were accompanied by review-tabulations of the factors affecting automobile sales. We found them extremely interesting, and for the sake of making them a matter of record, they are printed below. Those factors governing yearly changes in automobile demand were listed as:

1. General business activity and the national income.
2. Cost of living.
3. Price. This must be considered in connection with the extent and character of model changes in automobiles. Consumer anticipation of price changes must also be considered with the price factor.
4. The number of cars in operation and their age.
5. Maxium car-ownership level, which is a function of population, real national income, and price.

Additional factors governing monthly changes in automobile demand include: 1. Seasonal variations. 2. Stimulus to sales afforded by new model announcements, and the date of such announcements. 3. Trend of general business activity and national income during the year. 4. Availability of new cars—the rate of production and field stocks. 5. Consumer anticipation of price changes. 6. The used car factor.

Many of the papers presented in Detroit contained technical-statistical hurdles which would make them forbidding to the general reader. Some of them contained material of very general interest to the industry, and we hope to make available within the next few weeks authentic digests of the more important material.—HERBERT HOSKING.

Conveyors

Rotary polisher which imparts the proper nickel color to door handles before chromium plating.

Specially designed roll forming machine (at the left) rolls and welds the U-shaped steel bows that reinforce the one-piece steel roof used on GM cars.

PARAGON of the "last word" in handling and routing materials in their transition from raw to finished products is the new Ternstedt plant at Trenton, N. J., where body hardware and fittings are manufactured for General Motors cars assembled in the East and South. An invariable feature of all production lines is the use of straight-line flow of materials and operations. Materials handling at every point is facilitated by the installation of slides and belt conveyor sections ranging in length from 5 to 30 ft. Monorail conveyors, elevators and hoppers, the latter adjustable as to speed to conform with that of a specific line or operation, also are provided.

The mechanical hardware department, one of five major manufacturing departments, comprises three separate sections. A battery of 12 welding machines of various types ranging from 15 KVA spot welders to 250 KVA projection welders is set up in the first and second sections. There is also a group of presses ranging in capacity from 8 to 150 tons. The first section houses facilities for producing such items as seat adjustment mechanisms, cowl ventilators, drip shields for the Fisher no draft ventilation system, door bumper caps, door check links, compartment door hinges, trim and windhose retainers, and window regulators.

Eight fabrication lines in combination with two separate assembly lines are provided for operations preceding the black enamel in the production of seat adjusters. There are also four fabrication and assembly lines for operations following enamel.

A separate line is provided for cowl ventilators, and four fabrica-

Speed Ternstedt Production

THIS IS THE THIRTY-THIRD IN THE SERIES OF MONTHLY PRODUCTION FEATURES

tion lines in combination with one assembly line for window regulators. The cowl ventilator handle and linkage are served by two fabrication lines and an assembly line prior to black enamel, and one assembly line following the enamel.

All unexposed parts made in this department which are finished with a coating of black enamel are run through a huge overhead enameling installation 100 ft. long, that is served by a monorail conveyor 1031 ft. in length. Such things as bumper caps, door check link assemblies, cowl ventilator cover assemblies and door lock strikers, on the other hand, go through a bonderizing treatment combined with a ground coating, the final finishing being given them at the Fisher Body and General Motors assembly plants to which they are shipped.

The first operation prior to enameling is a wash in a caustic soda solution followed by a hot rinse to remove all traces of dirt, chips and oil. The parts then cool while traveling on the monorail, dip into the enamel, pass over a series of drip tanks, and double-pass through the drying oven. The monorail then takes them down to floor level, where they feed into hoppers and proceed by gravity feed to the central distributing station.

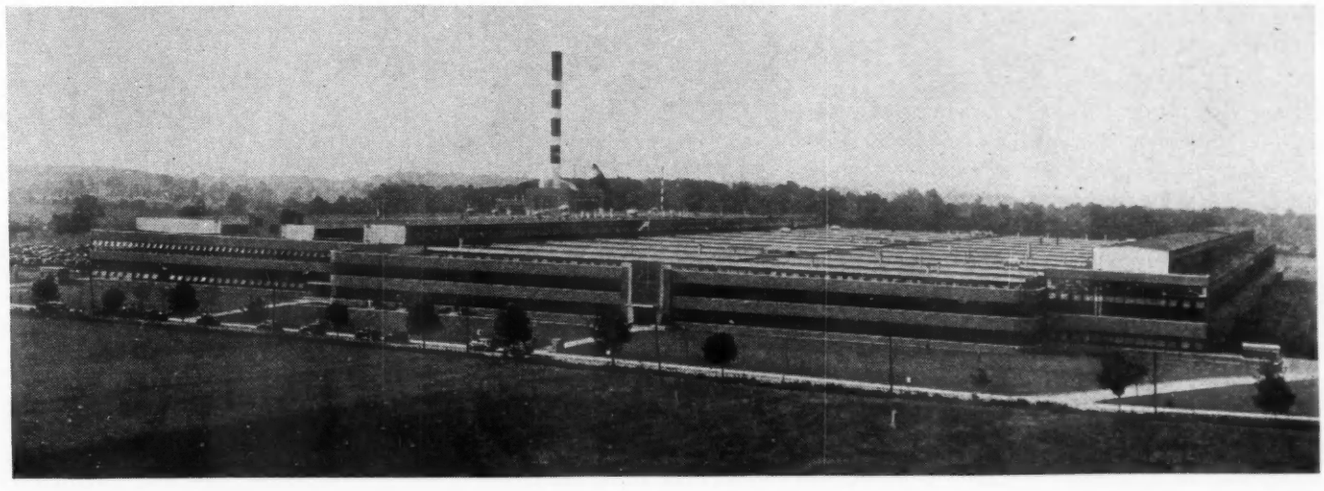
The bonderizing unit is of the spray type. Parts to receive this treatment are deposited on racks holding approximately 40 pieces, the exact number depending upon the size of the parts. These are hung on an overhead monorail for bonderizing, after which they are hand-dipped in the ground coat. The racks are then returned to the monorail for the trip through the drying oven, moving from there to the central packing station.

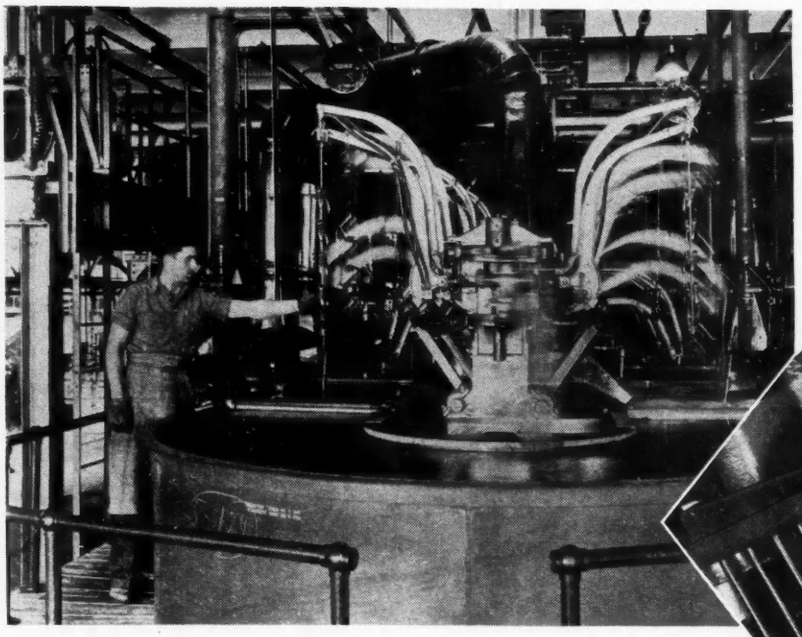
This oven is approximately 150 ft. in length and, like that used for the enameling operation, is suspended at truss level, or about 14 ft. above the floor. The monorail serving as the ground coat and bonderizing feed conveyor is 1125 ft. in length.

The second section in the mechanical hardware department is arranged for the production of deck compartment, door and remote control locks. Zinc-coated strip stock is used in the manufacture of all parts where no welds are required; others are zinc-plated upon completion of the fabricating operations to prevent the possibility of corrosion.

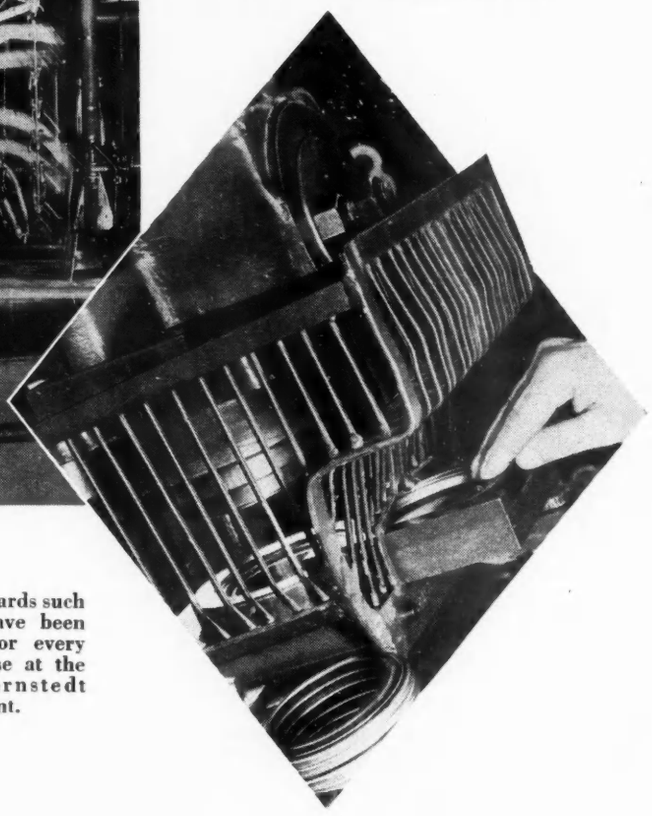
The parts to be zinc-coated are treated in an automatic barrel-type plating unit, approximately 60 ft. long and 9 ft. wide. The various parts are loaded in rubber coated baskets on a return-type conveyor that automatically raises and lowers them as they move through the various baths. While in motion, the baskets are rotated to insure the

Twenty acres producing body hardware and fittings at the Ternstedt Trenton Division of GM.





All chromium plating is performed by this 54-ft. machine which is centrally located in the plant and connected by monorails to the various inspection stations serving the nickel-plating operations.



Special guards such as this have been evolved for every tool in use at the new Ternstedt plant.

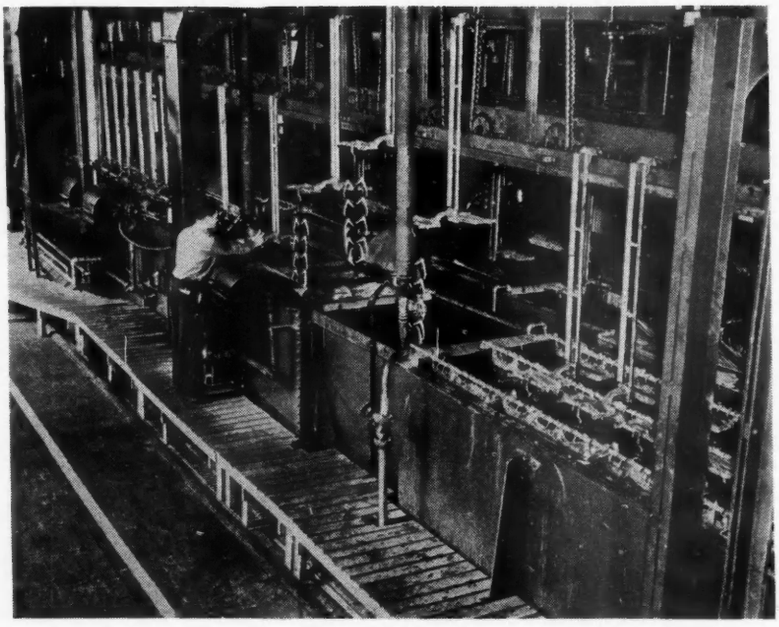
proper treatment of all parts, which are automatically dumped out of the baskets on an inclined belt conveyor upon completion of the cycle of baths in the plating process. The conveyor carries the various parts to portable hoppers, which are used to transport them to the assembly stations.

The third section in this department is the outside door hinge unit. Fabrication of the door hinges is particularly interesting in view of the fact that elevators, or bucket conveyors, some of which have both horizontal and vertical movement, are employed in conjunction with slides to convey the parts from one machine to the next.

The reason for this is found in the weight of the hinge straps, which are produced from uniform blanks of 9/32 in. cold rolled steel. Canvas belts would not last for any length of time if they were employed as in other departments.

Another feature is the use of large divided storage hoppers. These are an essential part of the production layout due to the variety of hinges produced, requiring three different female and four male straps. They serve not only to keep the various types of blanks separate but afford a means of holding banks of parts where needed. For example, there is one feeding a special broaching machine. The hopper provided at this point is large enough, so that dies in the machine may be changed without difficulty.

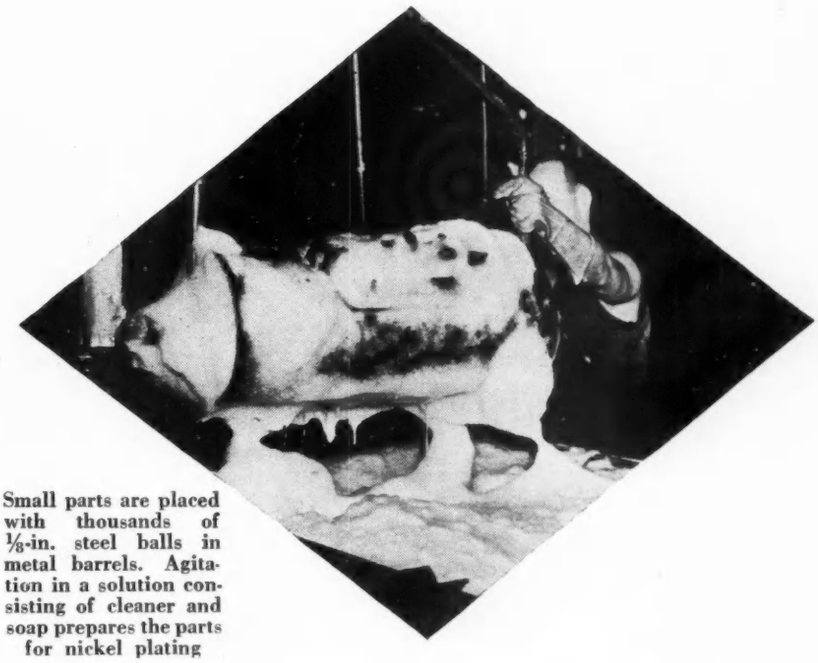
The first operation in the manufacture of the heavy hinges produced in this section is handled by three



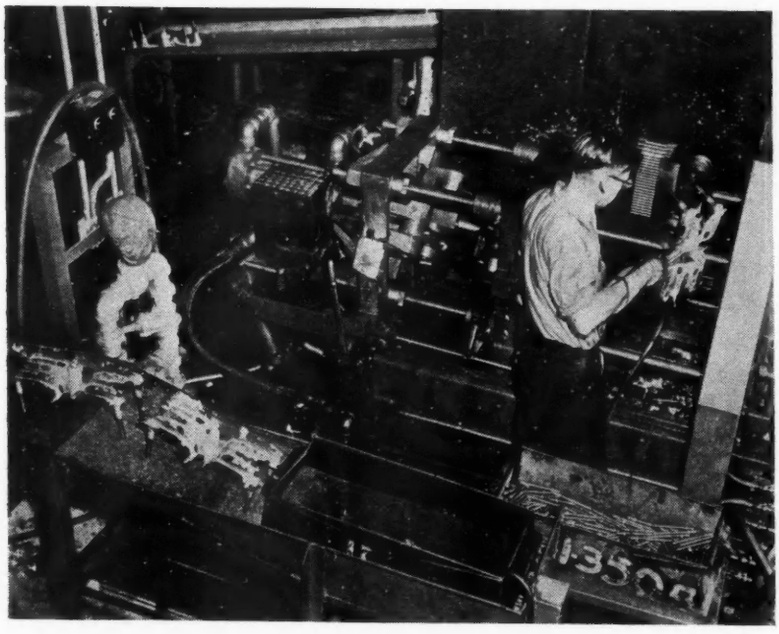
Nickel plating machine. Alternately dipping and rising, the conveyor with which this machine is equipped carries parts on racks into and out of the complete series of baths, including the electro-plating solution.

150-ton presses, one for blanking male straps, the second for female, while the third alternates. This is illustrative of the production scheme of the whole unit. The female straps are fabricated on one line, the male on another, and, though they may pass through the same washer, are handled individually until they reach the assembly section. As in the initial operation, also, by-passes are provided at frequent intervals from each of the outside lines to an emergency line in the center.

Department No. 2 consists of two main sections. One is devoted to the fabrication of roof bows, compartment gutters, sash assemblies, sash brackets, cloth clips, front drip moldings, inner panel and sash cams. The other, which is the larger of the two, is arranged for the production of garnish moldings for doors, windshield, rear quarter and back windows.



Small parts are placed with thousands of ⅛-in. steel balls in metal barrels. Agitation in a solution consisting of cleaner and soap prepares the parts for nickel plating



Machine for die-casting door handles. A battery of 19 similar machines is included in the equipment in the Ternstedt plant.

A variety of roll forming machines of special design used to produce formed sections for the "unisteel" turret top body by Fisher are set up in this department. In the smaller of the two sections there are five separate rolling mill lines. The larger section, in addition to its rolling mills, houses a battery of 133 presses for forming, sizing and other operations. These range in capacity from the smaller sizes to a 180-ton toggle press weighing approximately 100,000 lb.—the largest piece of equipment in the entire plant.

The salvage center in this department is a unique set-up designed to handle the usually troublesome problem of quality control. It is a sizable section which receives parts from every corner of the department. It has a service monorail with a developed length of some 1200 ft. that contacts all inspection stations. Whenever a part fails to satisfy the inspector, it is placed on the salvage monorail and finds its way to the salvage center where the necessary adjustments are made and the parts returned to their proper stations along the processing lines. Parts that are in any way spoiled are consigned immediately to scrap.

The front door garnish molding, in the first phase of its production, consists of an "upper molding" of channel section and a "trim panel," the latter constituting the lower sill of the window. The upper molding starts as a coil of narrow strip steel stock weighing about 400 lb. per coil. The strip passes through a roll forming machine, of which there is a battery, emerging as an accurate and continuous channel section. As the formed channel leaves the machine, it is cut, automatically, into strips of exact length which drop onto slides and are carried into the bending machines.

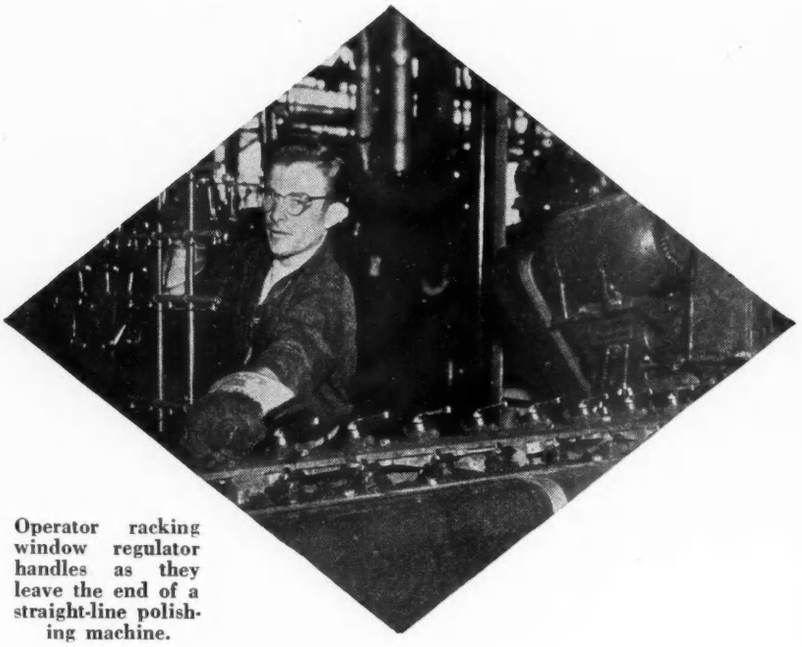
The strips enter the benders in correct position and emerge as U-shaped open frames comprising either a pair of lefts, or a pair of rights, depending upon the set-up of the machine. The bending machines are hydraulically operated elliptical benders which go through their entire cycle automatically.

Upon discharging from the bend-

ers, the U-shaped frames are placed on an overhead monorail, which carries them to the first press operation where they are notched and then cut in two. Following this, the individual upper sills go through 10 separate press operations before reaching the flash welders that unites them with the trim panels.

Lower panels start their course in the form of suitably trimmed and shaped blanks, which are received from the rolling mills in bundles. The bundles are transported to the first operation, that of straightening the metal by working in a "roller-leveler" by a crane which discharges the bundles on a gravity slide. The straightened blanks then move on another gravity slide to the first draw press, which produces a pair of lower sills by punching out the entire center section of the blank. Ten separate press operations follow, in which the pairs first are cut into two panels and then completed in preparation for assembly.

The upper panel sections move down lines at each side of the department, while the right and left hand lower sill sections travel on two lines down the center. Eventually, the upper and lower panels meet at a battery of four 35 KVA flash welders—two for the right-hand and two for the left-hand moldings—where the frames are welded into one-piece units. From the welders, the completed frames are transferred to a power hammer for the final sizing and finishing touches.



Operator racking window regulator handles as they leave the end of a straight-line polishing machine.

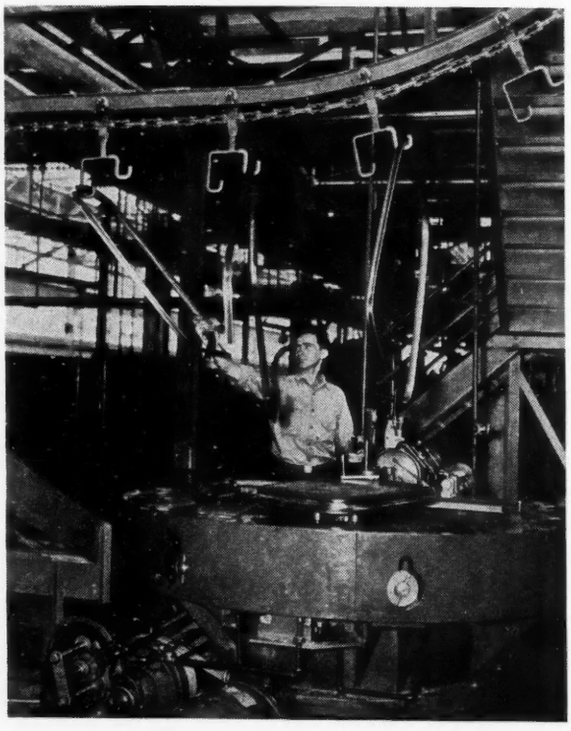
The frames are then hooked to a monorail that transports them to the metal finishing section. Here they are disc-ground to prepare the metal for painting, polished on No. 80 wheels, oil-polished on No. 120 wheels and inspected. Those that pass inspection are hooked to a transfer conveyor, which moves them to the paint department on the second floor.

An outstanding feature of the operation represented by the garnish molding department is the provision for ample blanks of work-pieces, so the equipment and operations may keep going without interruption and without the need for relief operators. This feature has been incorporated in the materials handling system by making each monorail sufficiently long to accommodate the bank material in addition to work in process. An example of this is seen in the transfer conveyor mentioned above, which has room for a bank of 5000 pieces between the fabrication and the finishing departments.

In department No. 3, or the paint finishing department, there are three separate paint lines serviced by means of a unified system of overhead monorail conveyors. When the moldings reach this department, they are first cleaned to remove all traces of oil and dirt by treatment in a chemical solvent cleaning tank. They are then dipped in the ground coat, allowed to drain, and are baked for 30 min. in an oven. The frames subsequently enter the graining department where the graining rolls fix the pattern on the panel, faces, and edges. Next comes the "smoke" or shading spray coat used on certain portions of the frame. This is followed by a 20-min. bake to set the graining.

Throughout these steps the frames are carried by the monorail system.

(*Turn to page* 25 *please*)



Bending machine for forming seamless steel garnish moldings.

Grinding off the core marks and any other rough edges left after engine blocks are cast in the Pontiac foundry. Note how the workman is protected by goggles, mask, apron, armlets and gloves against flying particles.

Production Lines

Multiple Tips

Production men have realized for a long time that cemented-carbide tools emerged from the single-point applications some years ago. In fact, this publication has had a number of articles showing the variety of intricate tools that have been designed with cemented-carbide tips. However, if anyone has had doubt as to the commercial possibilities of such tools, they came away convinced by the attention-compelling display put on by Carboloy at the recent National Metal Exposition. Literally scores of tools, vieing in intricacy were on display, tools taken directly out of the stock of many prominent suppliers to the automotive industry. In the process of growing, cemented-carbides have lifted metal cutting to unprecedented heights.

Industrial Lubes

Valuable supplement to the survey on materials handling equipment published in AUTOMOTIVE INDUSTRIES, Nov. 5, is the October issue of *Lubrication* a publication of The Texas Company. This issue is devoted entirely to the subject of the lubrication of heavy-duty materials handling devices. It's a practical treatment of the subject, giving definite recommendations for the economic servicing of materials handling mechanism of every type. Be sure to file it with your copy of AUTOMOTIVE INDUSTRIES. If you are not a regular reader of *Lubrication*, you should be, and we shall be glad to recommend your name as a subscriber—no charge at all.

Swell Action

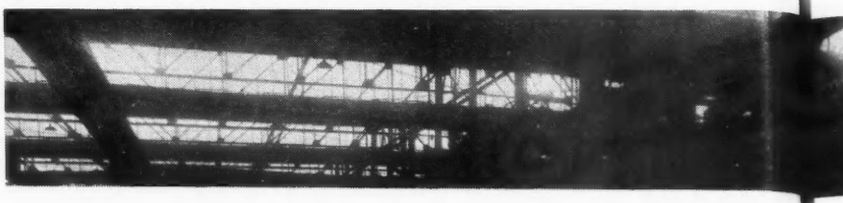
This fluid flywheel of Chrysler's is one of those things that bears out our pet theme that most humans must experience in order to really understand. A mathematical explanation is one thing—but a turn behind the wheel is something else. We drove one of the big seven-passenger Imperials about ten miles in dense traffic. Here was the set-up: transmission in overdrive, remote shift lever in high. You come to a stop by just treading on the brake pedal; you start simply by treading on the accelerator pedal. Not once was the shift lever touched. Psychologically the car may seem logy (at first) when accelerating from a dead stop but you discover that that's because you do nothing mechanically in the interim. Actually when you watch a driver in a car alongside you discover that by the time he has shifted into high you are traveling at maximum speed and are at no disadvantage in the complete maneuver. We commend an experimental ride in the Chrysler Custom Imperial.

Superfinish

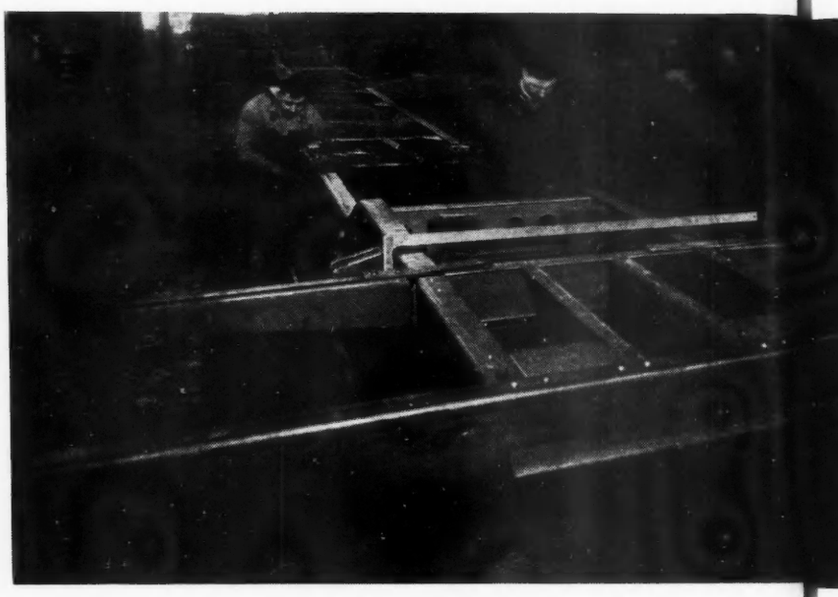
Even in the brief interval since the publication of the details of the Chrysler Superfinish process in AUTOMOTIVE INDUSTRIES recently (Sept. 10, 1938), much valuable and fundamental data have been discovered. This was evident from the superb presentation of the subject by Dave Wallace, president, Chrysler Sales Corp., at the recent conference on surface finishes called at his request. It has been established that the surface imperfections, evident as scratches on the surface, are particles of amorphous material which readily rub off. The principle function of Superfinish is to remove all of the amorphous surface coating right down to the basic crystalline structure of the material. The resulting surface opens new vistas in engineering design theory, and in lubrication, according to Chrysler research. It seems probable that Superfinished bearings can be made to carry almost double the load normally calculated for a given bearing. Like other unique discoveries, Superfinish threatens to change the complexion of certain basic methods of metal removal. Dave Wallace hinted at some new machines in the offing—one of these, a new Lo-Swing camshaft turning lathe with a Superfinish attachment; the other, a new method for producing Superfinished cylinder bores. All of these things bear watching on the part of production men and machine designers concerned with automotive production.

Machine Crisis

Garet Garrett, practical economist, has written a thought-provoking discussion of the problems of the machine age. It's entitled, "Machine Crisis," published in *S. E. P.*, Nov. 12. In a crisp and fresh appraisal of historical background and statistics, Mr. Garrett brightens the role of the machine as a "labor-aiding" rather than "labor-saving" device. How the machine has created new opportunities, new industries, new outlets for more labor, all are presented in his distinctive style.
—J. G.



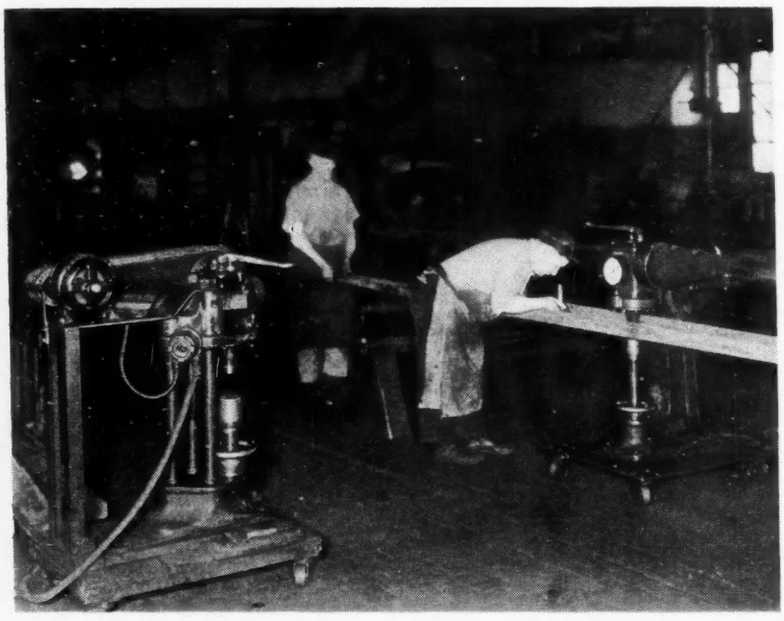
Producing Heat Treated



View of the assembly floor. Cross members are hot-rive

By H. E. Blank, Jr.

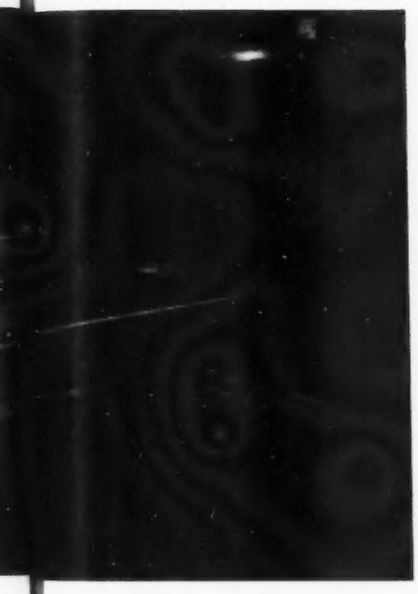
HEAT-TREATED frames have been used for many years in heavy-duty commercial vehicles built to withstand more than the ordinary amount of punishment in service. While such frames are found today solely in trucks, buses and trailers, they were incorporated years ago in the more expensive passenger cars. The Duryea and Pope-Hartford were among the early designs to employ them, but the use of heat-treated frames in passenger cars ended when Pierce-Arrow discontinued the practice in 1927. The Parish Pressed Steel Co., Reading, Pa., which supplied many of the early passenger car builders with heat-treated frames, began making these frames for heavy-duty commercial vehicles in 1911 when Autocar, Mack and White, among others, adopted them for some units. At the present time this company is supplying heat-treated frames to a large number of commercial vehicle builders, both in America and abroad. This type frame is used on a great many oil company trucks, also on fire apparatus. A recent order for garbage disposal trucks for New York City specified heat-treated frames.



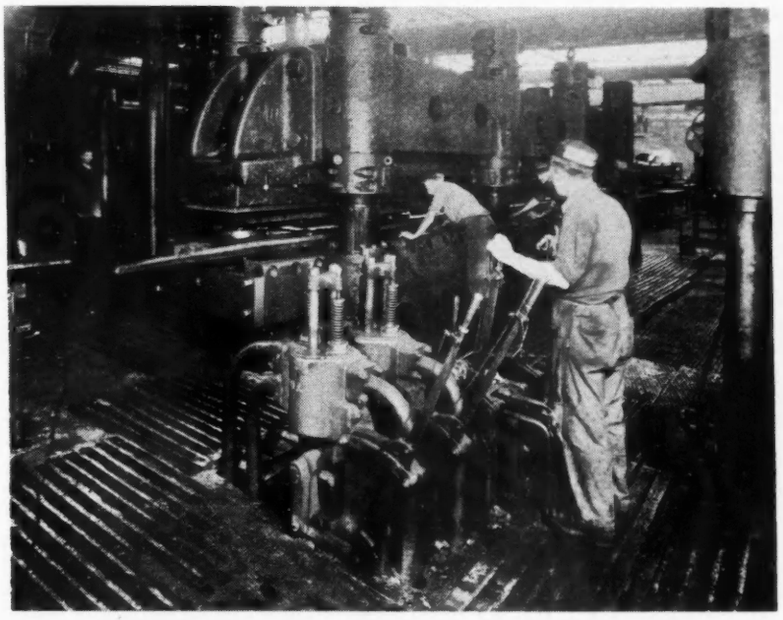
Each rail is Brinell tested in three places before it is cleaned and straightened.

The first step in manufacturing these frames at the Parish plant is to crop the ends of the raw material which is received in sheet form from the steel plants. Sample crop-ends are taken to the company

Truck Frames at Parish Plant



the drilled rails.

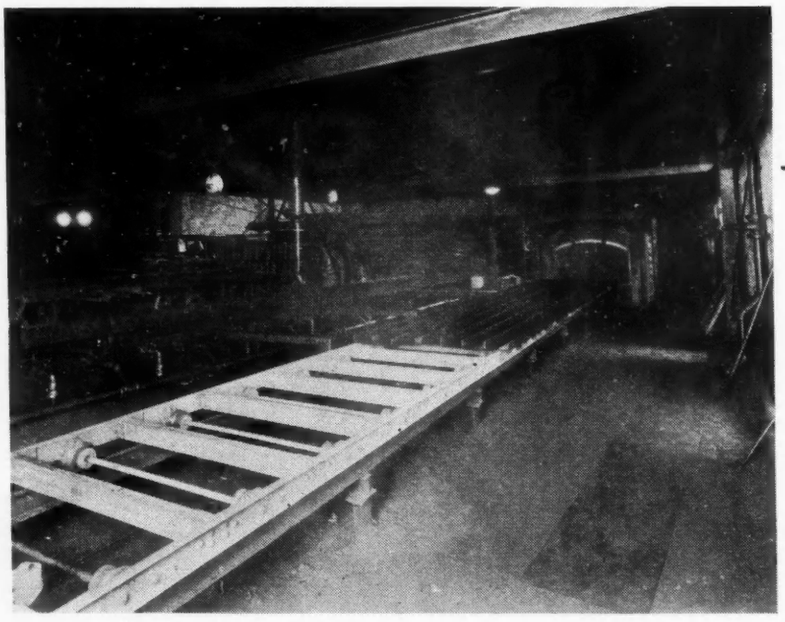


The 4000-ton Mesta hydraulic press which takes a steel sheet up to 30 ft. in length and completely forms it into a side rail in a single stroke. With two strokes rails up to 50 ft. are made.

laboratory where the analysis specification is carefully checked. The sheet steel then goes to an annealing furnace where, for alloy steels, the temperature is held at 1460 deg. Fahr. for 24 hours. At the end of this period firing is shut off and the batch of steel is permitted to cool. Cooling requires about four days. Forty-foot furnaces are used and they will accommodate about 90 tons of steel.

The steel sheets are removed to a 28-ft. blanker where they are blanked out and sometimes perforated in the same operation. Two huge Mesta presses—one rated 4000 tons, the other, 3300 tons—are used for forming the blanks into side members. When formed, the side rails are heat-treated. Temperature of heat-treat for alloy steel side members is approximately 1550 deg.

The pyrometer controlled heat-treating oven.



Draw furnace in which the final reheat is made.

Effect of Heat Treatment on Truck Frame Materials

Grade of Material	18% Carbon Untreated	High Carbon Heat-Treated	Alloy Heat-Treated
Brinell Hardness	131	170-200	200-240
Elastic Limit	38,500	60,000	90,000
Tensile Strength	63,000	85,000	105,000
Elongation % of Length	30	25	18
Reduction of Area	51.6%	50%	45%

Fahr. An oil quench follows, after which every side member is Brinell tested at three points. Final operations include a sand-blast cleaning, careful inspection, straightening and usually assembly.

The virtues of the heat-treated truck frame are set forth by this manufacturer as follows: It reduces weight as much as 40 per cent as compared with low carbon, untreated steel; increases strength 100 to 200 per cent over low carbon, untreated steel; raises the elastic limit and fatigue value at least 150 per cent over low carbon, untreated steel; minimizes frame breakage; is more resilient; prevents crystallization; reduces maintenance costs; cuts payload costs; and, is cheaper when allocated over the life of the truck. The accompanying table on this page contains data compiled from tests to show the increased strength obtained by heat treatment.

Before the formed rails go to the heat-treating furnace they are inspected for fracture.

U. of D. Studies Conical Springs

A REPORT recently issued by F. J. Linsenmeyer, director, mechanical engineering department, University of Detroit, gives the details of some exhaustive tests on the perofrmance of Volute conical helper springs manufactured by Zink-Bordik Products, Inc., Detroit, Mich. Announcement of this type of spring for motor truck helper spring installation was made in this publication several months ago.

As a result of the investigation in the U. of D. laboratory, the following conclusions are stated by Professor Linsenmeyer:

1. The advantage of the conical spring over the helical is that it can be compressed to one metal thickness, or can even be reversed by pushing the small coil through the large coil.

2. The rectangular shape of wire permits the least space requirements and requires the least force to wind.

3. The Volute spring has an action similar to a shock absorber when used as a helper for leaf springs on a truck. While the shock absorber acts as a damper, increasing the natural period of vibration on the upstroke, the Volute spring decreases the amplitude and keeps the period while under shock the same as it was on the leaf spring

(*Turn to page* 24)

Castor Oil as an Engine Lubricant

ADVANTAGES and disadvantages of castor oil as a lubricant for aircraft engines were discussed in the French aircraft journal *Plein Ciel* by M. Jean Dintilhac.

The castor oil which is used for engine lubrication is of the quality known as "first pressing"; that is, it is the oil which is obtained when pressing of the castor beans begins. Practically speaking, there is only one first-pressing grade of castor oil for aircraft-engine lubrication, and this simplifies problems of stocking, inspection and purchase of the oil. One need not hesitate to buy the oil from the lowest bidder, for as long as it meets the specifications one can be sure that it is of the desired quality.

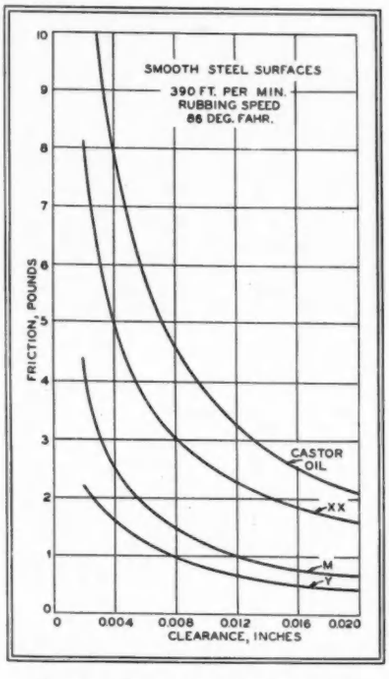


Fig. 1—Chart showing a comparison of castor oil and other lubricants in aircraft engines

From the technical standpoint, castor oil has the advantage that after a test run, it is only necessary to wipe the mechanical parts of the engine with a dry cloth to obtain a clean metallic surface that can be closely inspected. During the early years of the aircraft industry castor oil was the ideal lubricant for aircraft engines, but with further development of these engines the disadvantages of this oil became apparent one after another. At the present time it is fully recognized that castor oil alone cannot meet all of the various requirements of aircraft-engine lubrication.

Anzani was quite right when he said that in order to lubricate an aircraft engine well one must use castor oil and provide plenty of clearance between bearing surfaces, in accordance with the theory of the oil cushion. At that time rubbing velocities generally were low and clearances large, which permitted the use of a viscous oil. But rubbing velocities have increased greatly, and at the same time progress in production methods has permitted closer fits. Under these conditions the increase in the frictional loss due to the high viscosity of the oil becomes intolerable.

Fig. 1 shows that with castor oil the friction is approximately five times as great as with the light mineral oil currently used for the lubrication of aircraft engines, and that when the clearance is reduced to 0.008 in., the absolute increase in the frictional loss becomes considerable. The important factor in this connection is not so much the loss in power (which could be readily made up for by an increase in the displacement), but the increase in the temperature of the oil. If tin-base babbitt bearings are used, these are likely to burn out, or if the bearing temperature is not sufficiently high to melt it, the bearing metal may crack and peel, as indicated in Fig. 2. If the bearings are made of bronze—which generally has a much higher coefficient of heat expansion than steel—seizures due to expansion of the bronze may occur. True, such seizures can be prevented by making the clearances larger, but it should be pointed out in this connection that if the low-melting-point tin-base alloy is replaced by a bearing metal of higher melting point, the safeguards which the former provides are discarded at the same time.

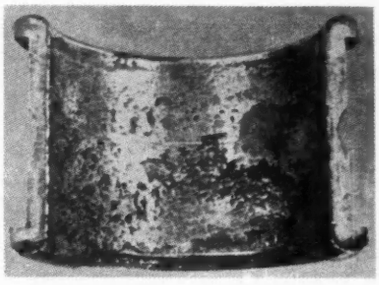


Fig. 2—Babbitt bearing showing babbitt cracked and flaked

Cooling in oil coolers is impractical, because it only further increases the viscosity, which is already too high. It has been found that in storage the acidity of castor oil increases rapidly. It is true that the acidity of the oil is not troublesome unless the oil is moist; in the latter case the highly acid oil attacks metal surfaces much more rapidly than neutral or only slightly acid oil. However, the principal disadvantage of castor oil is due to the gums it contains, which are carried along by the oil at the time the beans are pressed. In these gums the residues of imperfect combustion embed themselves. Finally, owing to its content of oleic acid, castor oil attacks metallic surfaces when hot and forms soaps which remain in suspension in the oil. These various impurities cannot be removed by centrifuging, which is the reason they are not generally found in the oil passages of the crankpins, but collect in the oil filters and coolers, and generally at points where the oil circulates slowly. Although this peculiarity is of no great importance as

long as castor oil is used alone, it becomes very objectionable when the latter is replaced by mineral oil.

As long as engine operating temperatures were comparatively low, castor oil had no adverse effect on the operation of the piston rings; but with progress in engine design piston-head temperatures have increased materially. Now, it is generally known that castor oil, the same as all other vegetable oils, has a strong tendency to oxidize at relatively low temperatures. An experiment performed in the ovens of the Air Ministry will show that at about 285 deg. Fahr. castor oil is rapidly transformed into a rubber-like substance. What is of even more importance is that the whole of the products formed by castor oil at this temperature is "cooked" at the temperature of the piston crown. This explains why piston rings are gummed up so frequently and so rapidly when castor oil is used as lubricant in modern aircraft engines.

Thus while it would be possible to continue to build aircraft engines designed to be lubricated with castor oil, it would be necessary to sacrifice high acceleration, close fits, the safeguards of tin-base bearing alloys, high power for take-off, long engine-overhaul periods, and the current use of multi-engined planes.

U. of D. Studies Conical Springs

(*Continued from page* 22)

under lesser loads.

4. Under increasing loads the leaf spring period of vibration increases so that a regular wave in the road will produce a pitching of the chassis. By interposing a Volute spring and increasing the spring scale the period will be decreased.

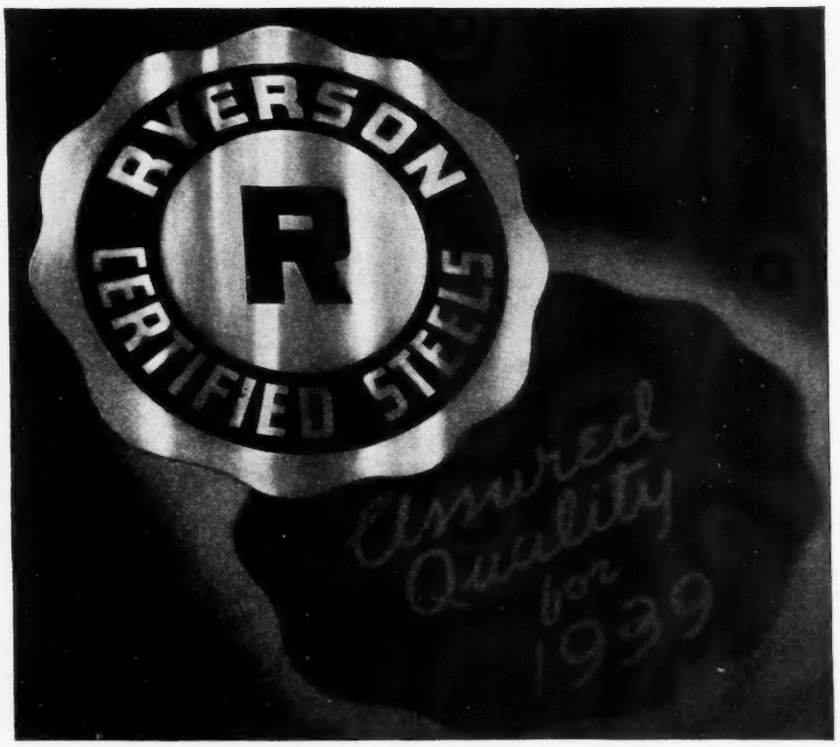
5. The assistance of the leaf spring rendered by the Volute spring is such as to resist overloads of 100 per cent or more, without affecting the light load characteristics. This is in contrast to the usual condition where the leaf spring is "bottoming."

6. Another feature is the absorption of the road shock in the resilience of the Volute spring, thereby preventing it from being transmitted fully to the tire.

7. Volute springs are sometimes used in twin sets in which the load is taken off the leaf spring fore and aft of the "U" bolts. "Brake-wrap," may be minimized by resisting the twisting action at a position a little distance away from the axle housing. By examination one can see that the rear spring of the twin set acts to keep the leaf spring from forming a letter "S" and stressing the U bolts to an excessive amount.

Junking Takes On A New Dignity

In a recent issue we reported that in Germany junk yards in future will be known as Autoverwertungsstellen or auto-realization undertakings, and we now learn that French auto-wreckers also have adopted a more formal name for their business. The industry is to be known as that of auto-demolition, and a trade association, the Chambre Syndicale de la Demolition d'Automobiles, has just been established, with M. Jean Cibie of Lille as president. Heretofore the business has been generally referred to as "la casse" (breaking up or junking). Thus an industry somewhat subservient to the automobile takes on a new dignity with its growing importance.



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RYERSON *Certified* STEELS

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(*Continued from page* 18)

which next takes them into the lacquer spray booths and drying ovens. The top lacquer coats are set by baking in these ovens for a period of 30 min.

Passing the final inspection of paint finish, the frames are transported to the final assembly operation, principally the installation of the draft strip, which is followed by packing.

One of the outstanding pieces of equipment in the department is a huge nickel plating machine to which all bright-plated parts are routed by means of an overhead monorail. The machine is 120 ft. in length, fully automatic in its operation, and represents the very latest development in the art of bright nickel plating.

The final brightly finished coat is a corrosion-resistant chromium plate, applied by a new automatic chromium-plating machine, 56 ft. in length. Both the nickel- and chromium-plating machines handle the variety of work pieces by means of special automatic conveyors, which dip and rise as they move from one solution to another.

Department four is threaded by a complete system of overhead conveyor lines. As an example of the other types of equipment that have been provided, it is interesting to note that the glass channel, alone, requires a battery of 10 buffing lathes and eight especially constructed polishing machines before nickel plating. Another feature is a huge straight-line polishing machine with six counterbalanced heads that seek out every portion of the division channel, taking in even the corners and crevices hitherto considered as strictly hand operations.

Small parts ordinarily are rather difficult to polish, yet must exhibit the same finish and eye-appeal as do the larger items. For this purpose, the engineers have devised a series of tumbling and burnishing operations.

The unit contains a battery of 13 tumbling barrels, in which the parts are cut down, removing sharp corners. This takes the place of polishing, while a battery of eight double-burnishing units puts the required finish on them. Small stainless steel, nickel- or chromium-plated parts are handled in this manner. Following these operations, the small parts are put through a battery of three continuous and automatic units, which wash the parts and dry them with sawdust.

Production of the ventipane frame is typical of the manufacturing processes conducted in this department of the new Ternstedt plant. This part is born of a relatively narrow strip of cold rolled steel, which is received in fairly large coils. The coiled stock is fed through special forming roll machines that convert the strip into the special channel sections. As the rolled section emerges from the last set of forming rolls, it is cut to proper length by an automatic attachment.

These strips drop onto conveniently located slides, moving by gravity to belt conveyors which transport

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them to storage hoppers. The hoppers serve ingenious hydraulic bending machines that automatically bend the channels into the shape of the ventipane, accurately and without disturbing the finely fashioned channel section. Emerging from the bending machines, the frames are automatically discharged into stock racks, where they are held in readiness for the inspectors.

The frames passing this inspection move progressively through a series of eight press and one drilling operation, and are again inspected. Parts that pass muster are then fitted on racks, which are placed on the monorail connecting this section with the polishing department. Operators at a battery of eight semi-automatic polishing machines unrack the frames, complete the polishing operations, replace the parts on racks, and hook them to the monorail, which moves on to the degreasing machine.

The latter prepares the frames for the electro-plated finish by removing any foreign matter that may have accumulated during fabrication. The job has to be expertly done, since the electro-plating operation will not tolerate the slightest trace of dirt or oil, or any surface imperfections. The cleaned frames are again racked, and hooked on the conveyor of the nickel-plating machine, going through the various stages of preparation and immersion in the nickel bath in an automatic cycle. The journey through the nickel plating machine takes 90 min. This length of time is necessary to meet the G.M. specifications for a total plate of 0.001-in. thickness.

After nickel plating, the frames are unracked and transferred to a storage monorail. This feeds the parts to a line comprising a battery of 10 buffing machines, on which the frames are given what is called a nickel "color" by hand. This is followed by another painstaking inspection, after which the frames are placed on racks and hooked to the automatic conveyor serving the chromium-plating machine.

The foregoing is an outline of the preparatory operations on the frame. Assembly of the ventipane comes next. Another monorail conveyor—the storage line—serves as a means of transportation between the fabrication and the assembly departments. This 550-ft. conveyor carries a total of 11,000 individual pieces at one time.

The first operation in the assembly department is the "sizing" of the frames, on presses, to assure faithful contour and dimensions. Then follow in succession the group of operations that complete the unit:

1—Assembly of the upper pivot bearing plate and spring.

2—Assembly of the T-shaft to the gear unit.

3—Inspection.

4—Assembly to the rubber channel.

The finished and inspected frames then move to the warehouse for packing and storage.

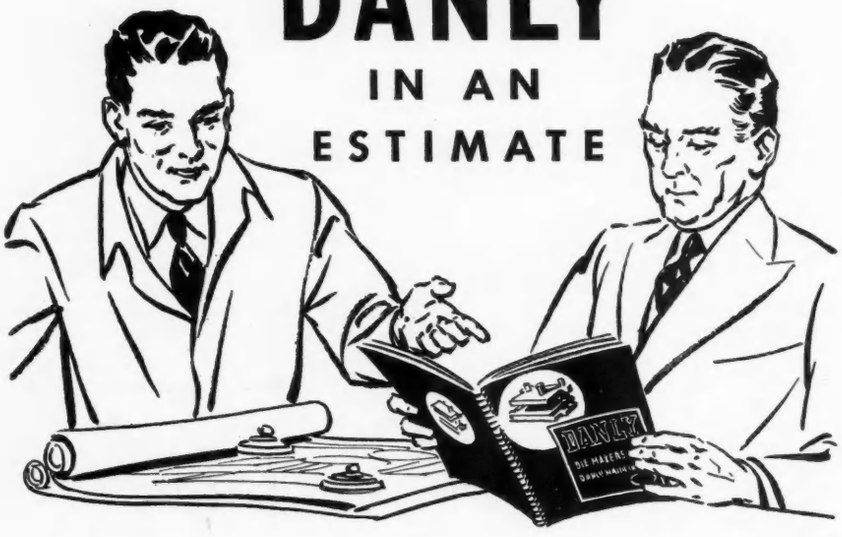
Department five or the die-casting unit proper, houses complete facilities for producing all of the interior and exterior fittings. Complementing it is the metal alloy section, or department six. This is situated at the head of the production lines, and contains the equipment required in the preparation of the zinc alloy charges for the die-casting machines, besides adequate accommodation for zinc slab storage.

The two units combined produce a wide variety of parts, including inner and outer door handles, deck lid and trunk handles, trunk hinges, crank handles for window regulators

THERE'S A GREAT COMMON INTEREST IN THAT WORD

"DANLY"

IN AN ESTIMATE



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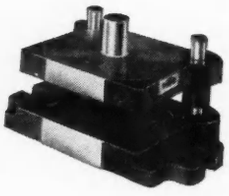

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Their Dependable Quality Means Lower Cost Stampings

and ventilators, and medallions of various sorts.

Some 450 tons of zinc with a purity of at least 99.99 per cent is maintained constantly in the metal alloy section to assure the continuity of operations at all times. This supply is stored, for convenience, in two large bins served by a craneway. In addition, there is a suitable storage bank of the alloys and special hardening additives required in the production of high-quality die castings.

Four large melting furnaces are required to keep the die-casting machines going, each batch of raw materials dropped into the maw of the furnace being carefully weighed in the specified proportions. The hardener, which is added to the molten metal, is prepared in two separate crucibles.

The resulting alloy is poured from the furnaces into ladles traveling on an overhead monorail that feeds the die-casting machines. Thirteen of these, with a die size rating of 18 by 18, are provided in one battery for the larger items. There is also a battery of six similar machines serving small parts production. Both batteries are traversed by belt conveyors, on which the work is discharged from the machines and transported to the inspection line.

Following the pattern in every other department of the plant, the die-casting department is completely conveyorized to expedite the smooth flow of work and relieve the operators of all the manual effort involved in materials handling.

Outside door handles are produced in a group of four die-casting machines, which are constantly supplied with the zinc alloy mixture brought to them in ladles by means of the overhead monorail conveyor. As the handles are cast, they are taken out of the dies, and trimmed to remove the metal flash and other metallic non-essentials.

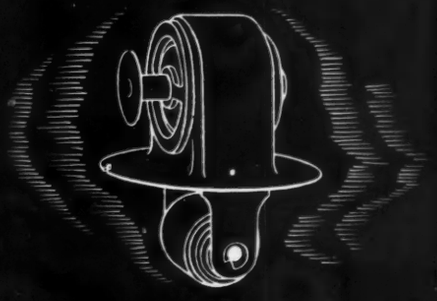
The parts then are placed on a monorail that carries them to a battery of metal-cutting machines of various types, where the steel inserts are machined and faced. The next operation is on the parts polish line. This is followed by the buffing of the door handle shanks, an operation performed on a novel buffing machine with heads that seek out and finish every face, corner and crevice. The polishing machine is 64 ft. in length and has 10 heads so disposed as to take in every part of the work piece.

Following polishing operations, the handles are transported by monorail to an automatic chemical degreasing machine that removes dust, dirt, grease, and polishing compound. The individual parts then are placed on plating racks, and are moved on to the automatic nickel-plating machine.

This is a self-contained piece of equipment more than 100 ft. in length, which contains a complete series of baths, including the electro-plating solution. Since this is the basic operation, all parts are subjected to a rigid inspection for quality. They are nickel-colored wherever necessary before proceeding to the chromium-plating machine.

All the chromium plating done in this department is handled by one machine, centrally located and connected by monorail to the various inspection stations serving nickel-plating operations. This is made possible by the fact that chromium plating is relatively a much faster operation than nickel plating. The chromium-plating machine is fully automatic in action and is 54 ft. in length.

After chromium plating, the parts are removed from the plating racks



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It is significant that a large majority of leading automotive engineers depend on Dole Thermostats for precise pre-determined motor temperature control . . . and specify Dole Thermostatic Bi-Metal to assure accurate temperature response in devices of their own development.

Dole Double Port Poppet Type Thermostat . . . the leader in a line of star performers . . . positively eliminates sticking, binding and friction; it is balanced to control the circulation and temperature of water regardless of pump pressure.

Dole Thermostatic Bi-Metal . . . made to exacting specifications by time-tested precision procedures . . . are available in sheets, strips, coils, and fabricated parts ready for assembly.

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at the striping station, where the decorative striping is applied by hand. For this operation, the parts are racked on a monorail conveyor to facilitate handling. Leaving the striping station, they proceed through a baking oven which permanently "sets" the lacquer.

Once more the handles are unracked, being placed on a belt conveyor that goes to the lock assembly line. While all outer door handles move along this line, only those with provision for the insertion of the lock mechanism are taken off at this point. The others continue to the end of the line for delivery to the packing station.

Interior fittings are treated in exactly the same manner as the exterior parts, being given the same protective coatings. To expedite the production process, however, some of the interior hardware operations are performed on different pieces of equipment. For example, the interior hardware has its own polishing equipment, including two of the special straight-line automatic polishing machines.

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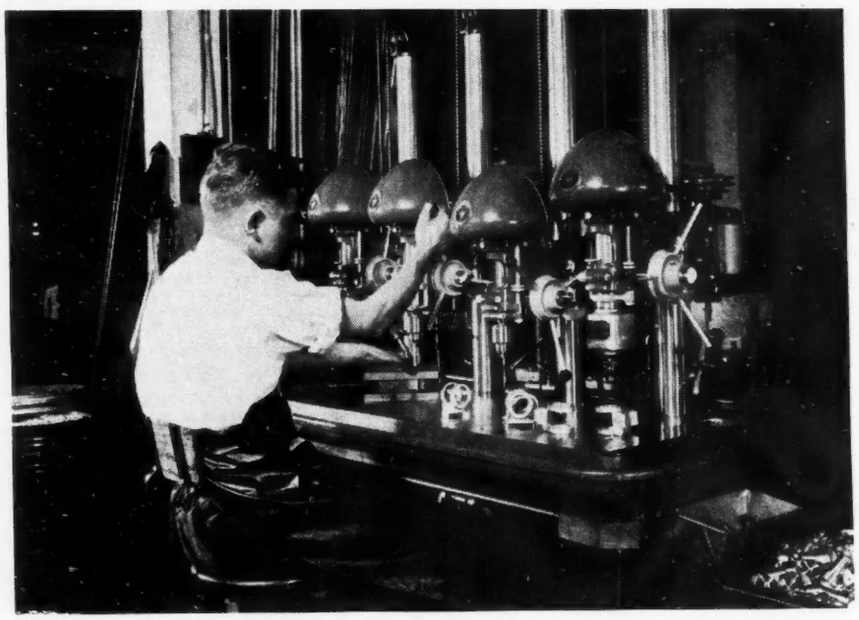

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"Float-O"— A Unique Oil Intake

Seventeen prominent American manufacturers of passenger cars, trucks, and engines are now using as standard equipment a new type of oil intake known as the "Float-O," which was introduced a short time ago by the Taylor Sales Engineering Co., Elkhart, Ind. Many foreign automobile and engine producers also are installing the accessory in their units.

The device is designed to prevent carbon particles, road-dust, bits of metal and water which may collect on the bottom of the crankcase from being drawn into the oil line and causing excessive wear of engine bearings. "Float-O" employs a sealed air chamber fixed to an arm which allows the intake to rise and fall with the oil level in the crankcase. Thus the intake is kept in constant contact with the oil so long as there is any available.

The manufacturer points out that inasmuch as the device keeps the intake constantly floating, oil is taken from the region where there is the least amount of sediment both from the overhead assembly and from the bottom of the sump. It is also claimed that the new oil intake prevents frozen oil lines in cold weather because it is well removed from water so long as oil is available in the crankcase.

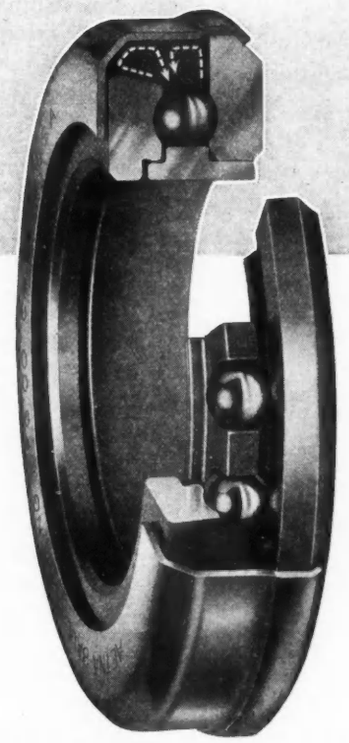
Castor Oil Is Base of Hydraulic Brake Fluids

Most brake fluids for hydraulic brakes have a base of castor oil. This oil cannot be used alone, however, because of its high viscosity at low temperatures. The chief advantage of castor oil is that it does not attack rubber. A liquid suitable for this purpose must have both a relatively low freezing temperature and a relatively high boiling temperature; it must not attack either metal or rubber, and it must have fair lubricating properties. The liquids usually added to castor oil to reduce its viscosity at low temperatures include ethyl alcohol, methyl alcohol, diacetone and monoethyl either of ethylene glycol.

R. C. Danly

Robert Clough Danly, president of Danly Machine Specialties, Inc., Chicago, died at his home at Hinsdale, Ill., on December 15 at the age of 66. Mr. Danly founded the company in 1923.

ALERT



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Beveled raceway and shell surfaces that force centrifugally thrown lubricant back to working parts, perfected sealing methods and patented, one-piece, oil-filled bronze ball retainers combine to make Aetnas the most efficiently lubricated, most trouble-free, long-lifed clutch release bearing available. They require no oil fittings, incur no extra installation costs, need no maintenance.

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Aetna "T" Type CLUTCH RELEASE BEARINGS

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